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FINAL

ENVIRONMENTAL STATEMENT

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MISSISSIPPI RIVER,
BATON ROUGE TO THE GULF OF MEXICO, LOUISIANA

Prepared by

US ARMY ENGINEER DISTRICT, NEW ORLEANS, NEW ORLEANS, LA

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MISSISSIPPI RIVER,
BATON ROUGE TO THE GULF OF MEXICO, LOUISIANA

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MISSISSIPPI RIVER
BATON ROUGE TO THE GULF OF MEXICO, LOUISIANA

( ) Draft (X) Final Environmental Statement

Responsible Office: US Army Engineer District, New Orleans
New Orleans, Louisiana

1. Name of Action: (X) Administrative ( ) Legislative

2. Description of Action: This navigation project provides for maintaining channels of specified dimensions in the Mississippi River and passes from Baton Rouge, Louisiana, to deep water in the Gulf of Mexico. The action consists principally of maintenance dredging at eight crossings in the Mississippi River, New Orleans Harbor, South and Southwest Passes and bar channels; regulating and contracting works at the Head of Passes and in South and Southwest Passes; regulating and controlling of outlets below New Orleans; and maintenance of jetty systems at the seaward ends of South and Southwest Passes.

3. a. Environmental Impacts: Dredging activities temporarily increase turbidities in the actual dredging area and immediately downstream. Benthic faunas, in insignificant quantities, in dredged areas are displaced and smothered by dredging activities; however, effects are considered minimal when compared to the total benthic population of the river bottom. In the passes, vegetation in spoil disposal areas is covered with fresh spoil during maintenance dredging. Reestablishment of similar or the same species occurs within one or two growing seasons. The increase in elevation due to the dredged material favors those species which more readily can adapt to this condition. Periodic placement of excavated material along South and Southwest Passes effectively maintains above-water land area at these sites which otherwise would be lost to subsidence or erosion.

Maintenance of the deep channel provides access by oceangoing ships to the Ports of New Orleans and Baton Rouge. The Louisiana parishes which border the river below Baton Rouge enjoy direct economic benefits from the project. However, the volume of commerce serviced by this deepwater channel represents extended economic gain throughout the Mississippi River valley and the Nation.

b. Adverse Environmental Effects: Dredging activities at the passes and upriver sites destroy benthic communities and smother some benthic organisms by siltation in the immediate downstream

areas. Dredging in open water by hopper dredge smothers the resident benthic faunas and increases turbidity in the immediate area. Some decrease in productivity by phytoplankters[1] in the passes and open water occurs when dredging is done during periods of low flow of the river. Pollutants settled on the river bottom are placed back into suspension by dredging operations.

Placement of dredged material on approximately 725 acres of marsh and existing spoil banks Below Head of Passes destroys existing wildlife habitat, the floral communities, and the productivity which they are presently adding to the terrestrial and estuarine communities.

4. Alternatives:

a. Alternate disposal procedures.

b. No-action.

5. Comments Received:

Department of the Interior, Assistant Secretary-Program Policy

Environmental Protection Agency, Regional Administrator

US Department of Agriculture, Soil Conservation Service

US Department of Commerce, Deputy Assistant Secretary for Environmental Affairs

US Department of Transportation, Coast Guard

US Department of Health, Education, and Welfare, Public Health Service, Region VI

US Department of Housing and Urban Development, Regional Administrator VI, Region VI

Advisory Council on Historic Preservation

Louisiana Department of Public Works, Baton Rouge

Louisiana Department of Conservation

Louisiana State University, Department of Geography and Anthropology

Louisiana Department of Art, History and Cultural Preservation

Board of Commissioners of the Port of New Orleans

6. Draft statement to CEQ 7 March 1973.
Final statement to CEQ JUN 26 1974.

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[1]Phytoplankters - free-floating plants.

MISSISSIPPI RIVER,
BATON ROUGE TO THE GULF OF MEXICO, LOUISIANA

FINAL
ENVIRONMENTAL STATEMENT

SECTION I--PROJECT DESCRIPTION

1. NAME AND PURPOSE.

The navigation project, "Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana," provides for maintaining channels of specified dimensions in the Mississippi River and Passes from Baton Rouge, Louisiana, to deep water in the Gulf of Mexico. The plan for maintenance consists of maintenance dredging at crossings in the Mississippi River and South and Southwest Passes and bar channels; regulating and contracting works at the Head of Passes and in the passes; and regulating and controlling of outlets below New Orleans; and maintenance of jetty systems at the seaward end of South and Southwest Passes.

2. LOCATION.

The project commences at the Port of Baton Rouge, Louisiana, approximately 128.6 miles above the Port of New Orleans and continues through the Port of New Orleans to about 94.5 miles below the Port of New Orleans to the Head of Passes. Below the Head of Passes two channels connect the project to the Gulf of Mexico: Southwest Pass about 22 miles in length and South Pass which is about 14.5 miles in length. The distances stated above include the bar channels for each pass. (See Plate 1.)

3. AUTHORIZING DOCUMENTS.

a. River and Harbor Act of 2 March 1945, House Document 215, 76th Congress, 1st Session, and prior River and Harbor Acts provide for channel dimensions as follows: Depths refer to m.l.g. (mean low gulf datum).[1]

(1) Baton Rouge to New Orleans section, 35 feet deep by 500 feet wide, 128.6 miles long.

(2) Port limits of New Orleans section, 35 feet deep by 1,500 feet wide, 17.2 miles long.

(3) Lower limits of the Port of New Orleans to Head of Passes section, 40 feet deep by 1,000 feet wide, 86.7 miles long.

(4) Southwest Pass, 40 feet deep by 800 feet wide, 20.1 miles long.

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[1]Mean low gulf is equal to 0.8 foot below mean sea level datum.

(5) Southwest Pass bar channel, 40 feet deep by 600 feet wide.

(6) South Pass, 30 feet deep by 450 feet wide, 13.5 miles long.

(7) South Pass bar channel, 30 feet deep by 600 feet wide.

b. The project was subsequently modified by the River and Harbor Act of 29 March 1956, House Document 245, 82d Congress, 1st Session. This act authorized the construction of the Mississippi River-Gulf Outlet, a seaway canal 36 feet deep and 500 feet wide from Michoud to Chandeleur Islands and increasing gradually to a width of 600 feet and a depth of 38 feet to the 38-foot contour in the Gulf of Mexico with protective jetties at the entrance, a permanent retention dike through Chandeleur Sound and a wing dike along the islands as required. The act also provides for an inner tidewater harbor consisting of a 1,000- by 2,000-foot turning basin 36 feet deep and a connecting channel 36 feet deep and 500 feet wide to the Inner Harbor Navigation Canal. Included, also, is the construction of a suitable highway bridge with approaches to carry Louisiana State Highway No. 47 over the connecting channel. The plan further provides for future construction, when justified, of a channel and lock in the vicinity of Meraux to furnish an additional connection between tidewater harbor and the Mississippi River. This feature of the authorized project is not further described herein but will be described in a separate environmental statement entitled "Mississippi River-Gulf Outlet."

c. The River and Harbor Act of 23 October 1962, Public Law No. 87-874, Senate Document No. 36, 87th Congress, 1st Session, authorized a channel 40 feet below m.l.w. (mean low water) and 500 feet wide from one-tenth mile below the Louisiana Highway Commission bridge at Baton Rouge to the upper limits of the Port of New Orleans. The act also authorized a channel 40 feet deep and 500 feet wide within the previously authorized 35- by 1,500-foot channel in the port limits of New Orleans. This modification consists of dredging in the Mississippi River and deposit of spoil in deep water in the Mississippi River. Maintenance dredging is currently performed at the following eight river crossings:[2]

(1) Red Eye - Mile 223 AHP (Above Head of Passes)
(2) Medora - Mile 212 AHP
(3) Granada - Mile 203 AHP

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[2]River crossings - stretches of the stream where the main flow shifts from one side to the other, shoaling up the navigation channel in process. See Plate 1 for location of crossings.

(4) Bayou Goula - Mile 197 AHP
(5) Alhambra - Mile 189 AHP
(6) Philadelphia - Mile 182 AHP
(7) Belmont - Mile 154 AHP
(8) Fairview - Mile 115 AHP

4. CURRENT STATUS.

Dredging is currently carried on as required to maintain project dimensions. For purposes of maintenance dredging, the project is divided into four sections: Baton Rouge to New Orleans; New Orleans Harbor; Southwest Pass and South Pass; and Southwest Pass and South Pass Bars and Jetty Channels. See appendix C for a brief description of dredging equipment used in maintenance operations. Also see Plate 7 which illustrates typical sections of dredge cuts in those four sections.

a. Baton Rouge to New Orleans. Dredging is performed at eight crossings of the Mississippi River, namely: Red Eye, Medora, Granada, Bayou Goula, Alhambra, Philadelphia, Belmont, and Fairview. The lengths of these crossings vary from 1 to 2 miles each. Dredging is performed annually within the period approximately from April through September, dependent upon the time of falling river stages. The work consists of the removal and disposal of shoal material above -40 feet m.l.w. over a bottom width of 500 feet. The material dredged is that which has been deposited since the last dredging and consists primarily of sand, silt, clay, but also includes trash, roots, stumps, logs, etc. The dredged material is pumped through a floating pipeline and deposited in the deep, fast-flowing pool areas below the crossings in the central portion of the river. Experience indicates there is no buildup of dredged material downriver of the disposal points.

b. New Orleans Harbor. Dredging is performed annually during the period approximately from April through September, dependent upon the time of falling river stages. The work consists of the removal and disposal of shoal material above -35 m.l.g., riverward of a line 100 feet from the face of the left descending bank wharves. The length of the area requiring dredging is 12.7 miles. The dredged material is conveyed by floating pipeline and placed in deep water beyond the -50-foot m.l.g. contour of the river. The work along the left bank areas is not continuous. Historically, dredging has not been required to maintain the authorized channel width of 500 feet at -40 feet m.l.g. riverward of the harbor dredging through the limits of the Port of New Orleans.

c. Southwest Pass and South Pass.

(1) Southwest Pass. Dredging in Southwest Pass is performed annually during the period approximately from June to October, dependnt upon the time of falling river stages. The work consists of removal and disposal of shoal material above -40 feet m.l.g. from the Head of Passes to mile 18.8 Below Head of Passes (BHP) over a bottom width of 800 feet and to mile 18.0 BHP over a

bottom width of 600 feet through the bar and jetty channel. The length of the area requiring dredging is 10.3 miles. The dredged material is deposited and confined by a dike system on the left and right descending banks of Southwest Pass and the liquid effluent is returned to the Mississippi River. Maps showing the spoil deposit areas are attached to this report. (See Plates 2, 3, 4, and 5.)

(2) South Pass. Prior to 1970, dredging was required intermittently to maintain authorized depths in South Pass. Since 1970, required dredging was accomplished annually after the high water seasons. The work consisted of removal and disposal of shoal material above -30 feet m.l.g. from Head of Passes to mile 12.6 BHP over a bottom width of 450 feet. The dredged material is placed on either side of the channel to restore the narrow banks as shown on the attached map (Plate 6).

d. Southwest Pass and South Pass Bars and Jetty Channels.

(1) Southwest Pass Bar and Lower Jetty Channel. Dredging is performed annually during the period from about mid-January through about mid-July, dependent upon the time of the high water season. The work consists of removing shoal material above the plane of -40 feet m.l.g. over a bottom width of 600 feet. The area extends from mile 18.8 BHP to the -40-foot contour in the Gulf of Mexico. The dredged material is transported and dumped in the gulf beyond the -45-foot contour at least 2,000 feet west of the gulf entrance channel. The littoral current in this region moves from east to west and, therefore, carries the material away from the entrance channel.

(2) South Pass Bar and Jetty Channel. Dredging is performed annually during the period from about mid-January through about mid-July dependent upon the time of the high water season. The work consists of removing existing shoal material above the plane of -30 feet m.l.g. over a bottom width of 600 feet. The area extends from mile 12.6 BHP to the -30-foot contour in the Gulf of Mexico. The dredged material is transported and dumped beyond the -35-foot contour in the gulf, at least 2,000 feet west of the gulf entrance channel.

e. Volume of dredging. See table 1, Volume of Dredging in Mississippi River.

TABLE 1[5]

VOLUME OF DREDGING IN MISSISSIPPI RIVER
BATON ROUGE TO DEEP WATER IN GULF OF MEXICO
(in cubic yards)(July 1960 to June 1973)[6]

YEAR	DEEP WATER CROSSING BATON ROUGE TO NEW ORLEANS[1]	NEW ORLEANS HARBOR[2]	SOUTHWEST PASS AND SOUTH PASS[3]	SOUTHWEST PASS AND SOUTH PASS BAR AND JETTY CHANNELS[4]
Jul 60-Jun 61	251,413	1,978,110	5,452,795	7,280,461
Jul 61-Jun 62	3,324,695	1,889,520	17,650,753	7,995,115
Jul 61-Jun 62			3,481,635*	
Jul 62-Jun 63	3,341,827	2,044,820		8,465,665
Jul 63-Jun 64	5,170,941	1,599,780	5,450,000	6,331,150
Jul 64-Jun 65	4,224,674	1,706,110	1,870,765	10,539,127
Jul 65-Jun 66	2,167,479	2,789,630	6,076,949	9,193,396
Jul 66-Jun 67	3,290,940	2,204,390	12,939,632	8,310,099
Jul 67-Jun 68	4,801,920	1,416,418	7,284,251	6,169,644
Jul 68-Jun 69	4,374,390	2,351,155	4,498,505	12,718,288
Jul 69-Jun 70	4,471,138	2,128,480	6,474,760	14,408,400
Jul 70-Jun 71	5,890,200	1,545,062	6,895,789	8,715,900
Jul 70-Jun 71			311,226*	
Jul 71-Jun 72	4,381,111	1,865,455	5,985,642	5,932,600
Jul 71-Jun 72			1,254,348*	
Jul 72-Jun 73	5,366,863	3,274,003	10,756,543	22,024,740
			950,742*	

[1]U. S. dustpan dredge

[2]Leased cutterhead pipeline dredge

[3]Leased dredge and unit price dredge

[4]U. S. hopper dredge

[5]Data tabulated by the U. S. Corps of Engineers, New Orleans District

[6]An analysis of a prior 32-year period ending in 1956 is given in Section II, paragraph 2.

*South Pass

5. REGULATING AND CONTRACTING WORKS.

At the Head of Passes and in South and Southwest Passes, there are located various regulating and contracting works which regulate and control the flow of water through and out of the passes. The east headland structure protects the land between Pass a Loutre and South Pass, and also controls the distribution of flow between the passes. The west headland structure protects the land between South and Southwest Passes, and also controls the distribution of flow between these passes. A total of 131 permeable pile dike are located in Southwest Pass and are perpendicular to the river bank. These dikes function to restrict the area of flow, maintain a current velocity sufficient to minimize the dredging necessary to maintain the navigation channel, while concommitantly encouraging accretion along the banks.

a. Headland structures. The headland structures are creosoted pile crib structures filled with rock. Each headland structure has eight wing dikes which protrude into the adjacent passes. These wing dikes are creosoted pile structures consisting of vertical pile clusters tied together with horizontal wales. Major repairs are made approximately every 10 years by adding stone to raise the stone core to plus 5 feet m.l.g. Other repairs include replacement of damaged piles and wales. Repair of damage from marine collisions is the most frequent maintenance activity.

b. Permeable pile dikes. Of 131 such dikes located in Southwest Pass, 104 are on the right descending bank and 27 are on the left descending bank. These dikes are similar in construction to the wing dikes previously described. The most frequent maintenance involves replacement of piles and timbers damaged by vessels.

6. REGULATION AND CONTROL OF OUTLETS.

The volume of flow of water through many of the outlets below Venice, Louisiana, is regulated and controlled through the use of sills or submerged dams. Sills across Grand Pass, Cubits Gap, and Pass a Loutre stabilize the distribution of flow below the Head of Passes in order that the need for dredging on South and Southwest Passes may be minimized. The condition of these sills has not changed in many years and no repairs have been made in recent years. Below the Head of Passes, there are 17 outlets in South Pass and seven in Southwest Pass. These outlets serve to divert sediments to the banks of the passes, and thus assist in the preservation of these banks against the forces of compaction, subsidence, and erosion. Most of these outlets have rock sills that are repaired

every several years. Repairs consist of placing rock on the sills to return them to the required elevations and placing rock along the banks to control erosion and prevent horizontal enlargement of the outlets.

7. MAINTENANCE OF JETTY SYSTEMS.

Jetty systems are provided at the distal ends of South and Southwest Passes. These jetties construct the flow area to the extend that sufficient velocity is maintained to carry transported sediments into the Gulf of Mexico. This reduces the amount of sedimentation in the channel and thus reduces the amount of dredging necessary to maintain project dimensions. Maintenance of jetties consist of placing stone to raise the jetty systems to the required elevation.

8. BENEFIT-COST RATIO.

The benefit-cost ratio based on 1 July 1972 price levels is 24.3.

1. GENERAL.

a. The Mississippi River between US Highway 190 at Baton Rouge, Louisiana, and the lower limits of the Port of New Orleans has a maximum natural width of about 5,000 feet and a minimum natural width of about 1,500 feet. The natural channel depths in this reach of the river vary from 30 feet to more than 100 feet. A project depth of 40 feet over a 500-foot bottom width is maintained by dredging at the eight crossings listed previously. With the exception of these short reaches of the river, where deep water crosses from one side of the river to the other, depths between Baton Rouge and the upper limits of the Port of New Orleans are generally in excess of 40 feet over bottom widths of about 1,000 feet. Through the port limits of New Orleans, the natural channel of the river is in excess of 40 feet deep over a bottom width of about 1,000 feet. No tributaries enter the river within the limits of the project.

b. The Mississippi River from New Orleans to the Head of Passes provides a channel about 40 feet by 1,400 feet in its natural condition. Therefore, no maintenance dredging is required for this section of the river.

c. At the Head of Passes the main channel of the Mississippi River divides into three principal distributaries which impart a "birdfoot" outline to the modern delta. These major distributaries are known as Southwest Pass, South Pass, and Pass a Loutre in both Southwest Pass and South Pass, the flow is confined to single channels. Pass a Loutre distributes into many smaller passes. Between the distributaries are shallow basins, or interdistributary troughs, which are largely covered with lakes and bays. In places the troughs hold extensive marshlands, and sand pits and subaqueous bars are located near their seaward margins. The visible, birdfoot-like configuration of the land mass is a portion of a broad platform built onto the gulf floor, the development of which has created a 50-mile wide protuberance on the continental shelf.

2. SEDIMENT LOAD.

During the period 1938 to 1962, the average suspended sediment load was computed to be 658,000 tons per day. It is estimated that the bedload[1] contributes an additional 15 percent, making the total

[1]Bedload - sediment which moves in almost continuous contact with the streambed, being rolled or pushed along the bottom by the force of the water.

load approximately 950,000 tons per day. The larger portion of the suspended material carried by the river to the gulf consists of fine silt and clay particles. Small percentages of fine and very fine sand are present, but grains coarser than fine sand are rare. The average suspended load is approximately 7 percent sand, 38 percent silt, and 55 percent clay. Bedload material samples indicate a wide variation in percentages of sand, silt, and clay. Like the suspended load, however, bedload grains coarser than fine sand are rare.

An indication of the relative quantity and location of materials deposited in Southwest Pass and bar channel can best be determined from records of dredging operations required to maintain project depths. An analysis of such records for the 32-year period, 1925-1956, indicates the following annual averages for materials removed by dredging: 2,263,000 cubic yards in the lower jetty and bar channel; 616,000 cubic yards in the jetty channel; and 394,000 cubic yards at the upper end of the pass near the Head of Passes. Southwest Pass project depth was increased to -40 feet m.l.g. in 1963 and the resultant increase in yardage is evident in Table 1.

3. DELTAIC DEPOSITIONAL PROCESSES.

Sediments carried to the delta are deposited onshore within several environments of the deltaic plain and offshore as stream mouth bars. As sediments reach the sea, the most active deposition occurs close to the mouths of the distributaries and creates bulges on the front of the deltaic platform - a submarine alluvial fan with slopes radiating from the stream mouth as from the apex of a cone. The Southwest Pass bulge has a radius of more than 3 miles and affects the bottom contours to a depth of over 240 feet. The greater part of the sand and silt load of the river is deposited as distributary mouth bars on the upper part of the bulges, where the velocity of the stream drops as it enters the sea. Most rapid bar building occurs during rising and falling high river stages. The fine silts and clays are carried seaward from the mouths of passes for considerable distances as plumes of turbid water and are deposited in the delta front zone. A large portion of the sediments is deposited around the toes of the distributary mouth bars, forming the basal part of the bulge. Much of the remaining load is deposited on the gulf floor, but some is swept inshore by marine currents and reaches the interdistributary troughs. The passes are generally straight and have lengthened seaward across their stream mouth bars, scouring and extending their channels through these deposits. The channels are deepest near the Head of Passes and shoal seaward. During low stages, the deeper parts of the channel may become filled with flaky clays, silts, and fine sands.

4. GEOLOGICAL ELEMENTS.

a. The project is situated on the alluvial and deltaic plains of the Mississippi River in the physiographic province known as the Central Gulf Coastal Plain. Dominant physiographic features are the natural levees and backswamp areas between Baton Rouge and College Point, mile 156 AHP, and the natural levees, marsh areas, abandoned distributaries, and numerous shallow lakes and bays below College Point. Elevations range between 50 feet m.s.l. (mean sea level) in the vicinity of Baton Rouge to at or near sea level in the area below the Head of Passes.

b. Between Baton Rouge and the general vicinity of Jesuits Bend, mile 68 AHP, the river has incised into Pleistocene and Holocene deposits. Upstream, the river has incised deposits along the right descending bank between Baton Rouge and College Point that consist of a fine-grained top stratum of natural levee and backswamp clays underlain by substratum sands and gravels; and along the left descending bank, of fine-grained natural levee and undifferentiated deltaic silts and clays. Exceptions to this depositional sequence are along the convex portion of the river bends where point bar silts and sands are located. Downstream of College Point, the Holocene consists of deltaic deposits of natural levee, marsh, intradelta, interdistributary, prodelta, and point bar. The Pleistocene along the entire channel from Baton Rouge to the Gulf of Mexico consists of clays and silts with local concentrations of sand.

5. HYDROLOGICAL ELEMENTS.

a. General. The water level of the Mississippi River is influenced appreciably by tide to the vicinity of Baton Rouge; at the mouth of the river tide is practically dominant throughout the project area. However, the greatest fluctuation is due to variations in discharge. Normal tidal range at the mouth of the river is between +1 and -1 foot m.s.l. The minimum recorded stage at Carrollton Gage, New Orleans, is -1.60 foot m.s.l. and the maximum recorded stage is +21.27 feet m.s.l. The maximum observed discharge at New Orleans was 1,360,000 cubic feet per second (c.f.s.) in 1927. The lowest recorded stage at Baton Rouge was 45 feet m.s.l. and the maximum stage was 47.8 feet m.s.l. In 1973 the net levee grades at Baton Rouge and New Orleans at the Greater New Orleans Bridge were revised to 50.7 feet m.s.l. and 23.9 feet m.s.l., respectively. Maximum observed discharge at Baton Rouge was 1,473,000 c.f.s. in 1945. No tributaries enter the Mississippi River below Baton Rouge. A system of distributaries, or outlets, discharges the riverflow into the Gulf of Mexico. Of these outlets, only South and Southwest Passes are maintained as navigable waterways and are used by seagoing vessels. Other distributary channels in the delta are controlled by sill dams at their heads and obstructed at their mouths by bars in open water.

Southwest Pass, Pass a Loutre, and South Pass are all tidal. Interaction of saline water from the Gulf of Mexico and silt laden fresh water from the river plays an important controlling role in the regimes of the two navigable passes. During low-flow periods on the river, there is an upstream flow of salt water under the fresh-water discharge. This upstream flow of gulf water is referred to as a "salt water wedge" and the interface between it and the fresh water has been arbitrarily established as 5,000 p.p.m. (parts per million) of chloride ion radical. This concentration does not necessarily indicate the separation of flow direction because salinities in this order are indicated in the downstream flow when the wedge is being eroded rapidly under rising river stage conditions. The salinity in the gulf approaches 20,000 p.p.m. chloride ion concentration. Since this wedge is under the fresh-water outflow and is directed upstream, it acts as a very effective barrier to the transport of bed-load. Flocculation of suspended materials results in deposition of such materials in the passes and shoaling as the "salt wedge" progresses and retrogresses in the passes.

The fresh water discharged through the passes of the river is controlled to some degree by the tidal action of the gulf. At low river stages, the flow in the passes may vary as much as 300 percent between tidal cycles; for instance, one record in Southwest Pass indicates a variation of from 42,400 c.f.s. to 128,000 c.f.s. during one tidal cycle. At higher stages, the effect is minimized and is, in fact, negligible at flood stages. The tides are diurnal and have a range of 2 feet during spring tides. Of the Mississippi River discharge reaching Head of Passes, approximately 40 percent is distributed into Southwest Pass, 20 percent to South Pass, and 40 percent to Pass a Loutre. Published discharge measurements taken in the passes indicate a range, during the period 1938 to date of 12,200 to 460,000 c.f.s. in Southwest Pass, -4,000 to 259,000 c.f.s. in South Pass, and 49,000 to 485,000 in Pass a Loutre.[2] The negative discharge reading for South Pass refers to flow from the gulf toward Head of Passes.

b. Climatology.[3] The geographic position of Louisiana in subtropical latitude adjacent to the large expense of warm water in the Gulf of Mexico is the major influence that determines the climate. The tropical influence of the gulf is evident in the range of average water temperatures along its northern shores - from 64° F. in February to 84° in August.

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[2]Stages and Discharges of the Mississippi River and Tributaries and other streams and waterways in the New Orleans District, 1938 to date.

[3]1969 Louisiana Almanac, page 79.

Louisiana is south of the regular track of large winter cyclonic storm centers but occasionally one does move this far south. During some winters when the boundary between warm and cold air is located over the gulf, a succession of storm centers will develop along this front and move over or near the state bringing overcast skies and steady rain.

The state is also affected infrequently in the summer and fall by tropical storms and hurricanes.

6. BOTANICAL ELEMENTS.

a. Between the levees.

(1) Baton Rouge to New Orleans. The Mississippi River between Baton Rouge and New Orleans is continuously leveed on both sides. Vegetation between the levees is mostly limited to brush second growth hardwood forest on the narrow batture[4] (100-200 yards) with the exception of a few wider "points" of land (several hundred acres) between the levee and the river that support mature stands of bottomland hardwood forest. These "points" of land exist where the man-made levee shortcuts across a point of land. The predominant overstory on the "points" is water oak, willow oak, hackberry, elm, sycamore, red maple, sweetgum, willow, cypress, tupelo-gum, and ash. In addition to reproduction of the overstory, the understory consists of poison ivy, trumpet creeper, Virginia creeper, devil's walking-stick, prickly-ash, moonseed, wild morning-glory, blackberry, muscadine, greenbriar, Japanese honeysuckle, switchcane, sedges, grasses, and forbes.

Vegetation on the narrower batture which is present along most of the river is mostly a willow, cottonwood, and sycamore overstory. The understory of the batture is reproduction of the overstory plus peppervine, blackberry, trumpet, and Virginia creeper, poison ivy, beefsteak plant, and sumpweed. Open areas support mostly blackberry, dewberry, switchcane, American elder, giant ragweed, panic grasses, Johnson grass, chickweeds, wild geranium, poor man's pepper, Japanese honeysuckle, evening primrose, butterweed, and wild melon. Borrow pits from which levee construction materials were excavated are numerous between the levee and the river, and are host to aquatic and emergent vegetation. Emergents common to the area are alligator-weed, smartweeds, water primrose, cattail, nutgrasses, sedges, and softrush. Aquatics include water hyacinth, duckweed, watermeal, water lettuce, pondweed, fanwort, and numerous species of algae.

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[4]Batture-the alluvial land between a river at low-water stage and a levee.

(2) New Orleans to Venice. Continuous levees exist in both banks of the Mississippi River from New Orleans to Venice with the exception of the Pointe a la Hache Relief Outlet located on the east bank between Bohemia, mile 45 AHP, and Bayou Lamoque, mile 33 AHP. The vegetation on the narrow batture is basically the same as the description in the preceding paragraph.

b. Outside the levees.

(1) Baton Rouge to New Orleans. Botanical elements along the Mississippi River vary with land use. The primary agricultural crop in the Lower Mississippi Valley between Baton Rouge and New Orleans is sugarcane. Some soybeans, cotton, corn, smallgrain, rice, pecans, pasture grasses, and garden crops are grown.

Forest and swamp areas are abundant outside the Mississippi River levees. The typical bottomland hardwood forests of the area are second growth stands of water oak, willow oak, sweetgum, ash, red maple, boxelder, hackberry, sycamore, cottonwood, and bitter pecan. Understory vegetation is reproduction of the overstory plus deciduous holly, haw, roughleaf dogwood, red mulberry, sweetleaf, muscadine, wild grape, greenbriar, rattan vine, and palmetto. The swamps and drainages are typically vegetated with a cypress, tupelo-gum, red maple, ash overstory and buttonbush, water elm, swamp privet understory. Basal area of each species present varies from stand to stand, depending on previous cutting and management practices. For the most part, the virgin timber was "high graded," and management since the initial cut has been lacking in many cases. The total harvest of growing stock (in million cubic feet) during 1970 for parishes along the Mississippi River below Baton Rouge are as follows: East Baton Rouge, 1.9; West Baton Rouge, 1.2; Iberville, 3.3; Assumption, 1.4; St. James, 0.4; St. John, 0.5; St. Charles, 0.4; and Ascension, 2.7.[5] There is no harvest listed for Jefferson and St. Bernard Parishes.

(2) New Orleans to Venice. Row-crop farming is limited south of New Orleans. Citrus fruit, mostly satsumas and some naval oranges are grown on the natural ridges.

The natural vegetation is coastal marsh grasses and emergents and natural ridge forest and brush areas. Fresh (0-5 p.p.t. salinity), intermediate (5-10 p.p.t), brackish (10-20 p.p.t.), and salt (20+ p.p.t.) marshes are all present along each side of the Mississippi River between New Orleans and Venice with marshes generally becoming

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[5]Beltz, Roy C., and Bertelson, Daniel F.; 1971 Timber Resource Statistics for Midsouth Counties; 1971 Southern Forest Experiment Station, New Orleans, Louisiana; (USDA) Forest Service Resource Bulletin SO-31.

fresher proceeding northward. Typical vegetation in the fresh marshes is maidencane, pennyworth, water hyacinth, pickerelweed, alligatorweed, bulltongue, and smartweed. The intermediate marshes are low in salinity with typical vegetation consisting of wiregrass, deer pea, bulltongue, wild millet, bullwhip, and sawgrass. The brackish marshes are of moderate salinity and support wiregrass, three-cornered grass, widgeongrass, coco, and camphorweed. The highly saline marshes support a much less diversified plant community with mostly oystergrass, black rush, black mangrove, Batis, and saltgrass.

The natural ridges, where they remain forested, support a live oak, water oak, hackberry, overstory with numerous other associated plants such as swamp dogwood, deciduous holly, American elder, palmetto, rattan vine, waxmyrtle, dewberry, blackberry, peppervine, trumpet creeper, poison ivy, and willow. Spoil areas in the marshes support low cover, namely; marsh elder, willow, scrub live oak, roseau cane, and waxmyrtle. Wet fresh areas support the typical cypress, tupelo-gum plant community.

c. Venice to the gulf. All of the area south of Venice is marshland with the exception of natural streambanks. The streambanks support the typical live oak scrub forest association previously described. The marshes are primarily fresh to intermediate due to the natural flow of fresh water from the Mississippi River. The marshes nearest the river are fresh. A band of intermediate marsh is present near the gulf where the salinities are highest.

Roseau cane, eastern baccharis, and rattlebox are the dominant species on higher ground in the South and Southwest Passes. Spartina spartinae, delta duck potato, marsh aster, and dwarf spikerush are common plants in the low areas that are relatively fresh. Fresh and brackish water species may be noted in close proximity in many places. Scattered cattail, pennywort, and sicklepod plants were found in close association with such brackish species as wiregrass and saltgrass. Near Head of Passes are scattered trees and shrubs such as black willow, sandbar willow, and American elder. Less common plants include elephant's ear, morning glory, Paspalum vaginatum, cypress, water hyacinth, and alligatorweed. Many of the marsh plants are heavily grazed by cattle and horses along the Mississippi River in the passes.

7. ZOOLOGICAL ELEMENTS.

a. Aquatic organisms supported by the Mississippi River in the project reaches, and those present in the deltaic marshlands, are listed below.

(1) Fishes of the Mississippi River. The river in the project reaches supports largemouth and white basses, black and white crappie; fresh water drum; channel, blue, and flathead catfish; bluegill; warmouth; bowfin; redear, longear, and several other sunfish; spotted, shortnose, long nose, and alligator gars; and buffalo. Freshwater shrimp are present and are harvested, to some extend, for bait and human consumption. Borrow pits between the levee and river support the same species of fish due to stocking by overflow.

(2) Fishes of the marshland. The marshes of the area below New Orleans provide nursery grounds for shrimp, blue crabs, and many species of fish of both sport and commercial value. Studies of fishes in the marshes of the Lower Mississippi River Delta have been conducted by Carver[6] and Kelly[7].

(a) Freshwater species of fish common to the marsh area include spotted gar, shortnose gar, alligator gar, bowfin, buffalo, blue and channel catfish, white bass, sailfin molly, mosquitofish, black and white crappie, largemouth bass, numerous sunfish, freshwater drum, and striped mullet.

(b) Salt-water marsh species of fish in the area include ladyfish, Atlantic, and bluntnose stingrays, bay anchovy, gafftopsail catfish, sea catfish, gray snapper, spotted seatrout, Atlantic croaker, red and black drums, spot, gulf menhaden, sheepshead, pinfish, and southern flounder.

(3) Benthic fauna. The Mississippi River supports limited benthic fauna due to sedimentation and the unstable river bottom. Cauthron[8] made a limited study of invertebrates in the Mississippi River at Baton Rouge in 1960 (see Table 2). He had three river stations ranging from the edge of the river (station 4) to the main channel (station 2). He found dipteran larvae to be the most common benthic organisms in the river and Tendipes was the most common genus.

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[6]Carver, Dudley C. 1965. Ecological factors affecting distribution and abundance of the centrarchids of the recent delta of the Mississippi River. Unpubl. M.S. Thesis, Louisiana State University, Baton Rouge, 111 pages.

[7]Kelly, John R., Jr. 1965. A taxonomic survey of the fishes of Delta National Wildlife Refuge with emphasis upon distribution and abundance. Unpubl. M.S. Thesis, Louisiana State University, Baton Rouge, 133 pages.

[8]Cauthron, F.F. 1961. A Survey of Invertebrate Forms of the Mississippi River in the Vicinity of Baton Rouge. Louisiana State University, Baton Rouge, M.S. Thesis, Unpub.

TABLE 2

INVERTEBRATES FOUND IN MISSISSIPPI RIVER

Station number (L = Bottom, U = 15 ft. above bottom)	2L	2U	3L	3U	4L
Protozoa					
Paramecium caudatum					4
Stentor coeruleus			1	1	
Epistylis				1	
Ephemeroptera					
Rithrogena*				1	
Stenonema frontale*			16		
Heptagena*			4		
Ephemeroptera nymphs*			7	2	
Diptera					
Pentaneura (larvae & pupae)*	9	62	13	14	19
Tendipes (larvae)*	40	158	47	62	183
Chrysops (larvae)*			1	11	
Tabanus (larvae)*				26	
Chaoborus (larvae)*		1			
Culex quinquefasciatus (larvae)					10
Miscellaneous phyla					
Oligochaete fragments*		228			1801
Macrobrachium ohione	5	1		1	
Physa pomilia*					9
Tubifex tubifex*					20
Dorylaimus					1
Hydropsyche simulans			1		
Elophila				3	
Somatogyrus subglobossus			3		
Gammarus fasciatus	8	1	39	3	
Philodina		3			

*Benthic organisms.

Oligochaetes were also common but since most specimens were fragmented, their true quantity is difficult to estimate. The above taxa were found from the main channel to the shore while protozoa and mayfly larvae were not found in the fast current of the main channel. Borrow pits and ponds between the river and levees and the marshes support rich and varied benthic fauna especially during low-flow periods. Typical organisms include chironomid larvae, amphipods, molluscs, and oligochaetes. These organisms are important constituents of the food chains and are essential for secondary productivity of economically important fish species.

(4) Zooplankton. Zooplankton, like benthic organisms, are somewhat limited in the Mississippi River, but are abundant in ponds and borrow pits along the river and in the marshes. Representative plankters include calanoid and cyclopoid copepods, cladocerans, rotifers, insect larvae, protozoans, and mollusc larvae. These organisms, like benthic organisms, are important food chain components and add tremendously to the productivity of economically utilizable species.

b. Wildlife present in the "batture" area between the levee and the Mississippi River from Baton Rouge to the end of the manmade levees are essentially the same throughout this area. Fauna of the batture area and of the marshland are listed below.

(1) Batture area. This area provides marginal wildlife habitat. The habitat comprises extensive stands of willow, sycamore, and cottonwood and open areas. Primarily, the areas free of forest overstory provide the best wildlife habitat. Wildlife species present include nutria, muskrat, mink, cottontail, and swamp rabbits, migratory woodcock, bobwhite quail, whitetail deer, raccoon, opossum, skunks, armadillos, gray and red fox, bobcat, and numerous small mammals including mice and cotton rats. Small birds are also numerous and include sparrows, redbirds, warblers, and many other passerine songbirds. Egrets, great blue, green, Louisiana, and little blue herons use water-covered portions of the area. Several species of hawks use open areas along the levees for feeding. Limited use of borrow pits by migratory waterfowl has been noted. The Mississippi River proper is used as a resting area by waterfowl during migration. Although the batture areas are not prime habitat for the range of wildlife species listed above, all the species can be found in them.

(2) Marshland. Fauna of the marshland include whitetail deer, cottontail and swamp rabbits, raccoons, numerous mice and rats, nutria, muskrats, and domestic hogs and cattle. Birds, both migratory and resident, use the area. Bird species include ibis, egrets, dowitchers, terns, gulls, skimmers, sandpipers, herons, marsh hawks, and some passerine songbirds. Wintering migratory waterfowl, of particular interest due to quality as gamebirds, that use the marshes include blue, snow, and whitefront geese, gadwalls, pintails, mallards, blue-winged teal, green-winged teal, shovelers, coots, redheads, greater scaup, lesser scaup, mergansers, widgeons, canvasbacks, buffleheads, common goldeneyes, and some black ducks. The mottled duck is the only known resident species of waterfowl nesting and wintering in the area; and the common snipe is the only known game species of shorebird wintering in the area. Snakes, bullfrogs, leopard frogs,

turtles, and alligators inhabit the marshland. Common snakes are the water snakes and the western cottonmouth. Alligators frequent the fresh to intermediate marshes.

8. ECONOMIC ELEMENTS.

a. Introduction. Maintenance of this deep channel provides access to the Ports of New Orleans and Baton Rouge by oceangoing ships. The banks of the river, especially in the vicinities of Baton Rouge and New Orleans are, therefore, prime potential industrial-commercial sites. The Louisiana parishes which border the river between New Orleans and Baton Rouge enjoy direct economic benefits from the project. These benefits will accrue in increasing amounts in the future. Benefit effects extend throughout the New Orleans and Baton Rouge greater trade areas, and encompass almost all of Louisiana and parts of Alabama, Mississippi, and Texas. Although the volume of trade and commerce induced by this deep-water channel represents extended economic gain throughout the Mississippi River system, the immediate impact is more pronounced in the New Orleans-Baton Rouge reach of the river. Most of the economic data in this statement will, therefore, relate to the 11 Louisiana parishes along the river between Baton Rouge and the mouth of the river. These parishes are West Baton Rouge, East Baton Rouge, Iberville, Ascension, St. James, St. John the Baptist, St. Charles, Jefferson, Orleans, St. Bernard, and Plaquemines.

b. General economy. The Mississippi River is the main stem of a network of inland navigable waterways which forms a system about 12,350 miles in length, not including the connecting Gulf Intracoastal Waterway (1,173 miles) with its connecting inland and Gulf Coast streams. This giant waterways system includes the Ohio, Missouri, Illinois, Arkansas, and Tennessee Rivers among others. It extends into the agricultural midwest and into the industrial east, effectively linking New Orleans, Baton Rouge, Memphis, and St. Louis with Pittsburg, Kansas City, Cincinnati, and Chicago.

Major commodities moving on the system include grains, coal and coke, petroleum products, nonmetallic minerals, metal products of all types, building materials, sand and gravel, salt, sulphur, and chemicals, among others. Many pleasure craft from all parts of the country are now used on the Mississippi River for vacation and travel.

The rapid growth of river traffic may be traced to many interdependent factors. Among the more important are the great improvements in towboats and barges. Modern steel barges have a capacity of three to four times that of one old-tick packet boat.

Barge dimensions have undergone substantial increase through the years. The standard barge for dry cargo is now about 195 feet

long and 35 feet wide; the liquid cargo barge is usually about 230-295 feet long and 50 feet wide. They are designed with a draft about 9 feet and a cargo capacity of about 1,500 tons for dry cargo barges and 2,500 tons for liquid cargo barges.

The modern diesel towboat may push more than 40 1,500-ton steel barges at one time. Integrated tows, developed several years ago, are becoming more and more numerous on the Mississippi. These vary in size, but one of the largest is nearly 1,200 feet long--longer than most oceangoing vessels. This tow often carries 200,000 barrels (35,000 tons) of petroleum products.

Towboats have become larger and much more highly powered. In the recent past, the average towboat had about 500 hp. (horsepower). Today, the average is about 3,000 hp. and several operating exceed 6,000 hp. The commercial towboat "United States" is a 180-foot vessel which has four diesel engines and can develop 8,500 hp. The 9,000-hp. quadruple-screw "America," put into operation in 1960, is probably the world's most powerful towboat. These sister ships are used primarily on the Mississippi River between St. Louis and New Orleans. Improved harbor and terminal facilities have also made significant contributions to the growth of inland waterways traffic. Many port cities in the Mississippi Valley have constructed, or are building, modern river-rail-truck terminals, storage facilities, warehouses, and other improvements designed to accommodate the shipment of materials by water. A prime example of such plans for improved facilities is the action now being initiated by the Board of Commissioners, Port of New Orleans, toward the development of Centroport, U.S.A. Centroport is a 30-year, $400-million project particularly aimed at enlarging and modernizing the inner harbor facilities of the Port of New Orleans relative to the Mississippi River-Gulf Outlet. It will enable the port to keep up with competition and new shipping techniques such as LASH, SEABEE, and RORO.

The LASH (lighter-aboard-ship) concept involves specially designed river barges which may be loaded at any port on the inland waterways, then towed to an ocean port. There the barges are loaded aboard a special oceangoing ship. The barges are unloaded at major overseas ports from which they are then towed to various inland destinations via rivers and canals. Each barge is 61 1/2 feet long by 31 feet, 2 inches wide by 13 feet high and can carry 370 long tons of cargo. The "mother ship," which is equipped with a 510-ton capacity crane to load and unload the barges, can carry 73 of the smaller vessels.

The SEABEE concept is similar to LASH and can transport 38 barges each 35 feet wide by 95 feet long with a capacity of 850 long tons. RORO ships provide an efficient means for moving wheeled cargo, in that such cargo is expeditiously rolled on and off the vessel.

The Mississippi River is one of the Nation's greatest industrial attractions. Water has become so important to industry that it is now regarded as an indispensable raw material for processing purposes as well as for the transportation of products. The Mississippi River and its tributaries and connecting waterways have had a definite and major influence on the economic growth and well-being of the American mid-continent.

Basic industries have invested billions of dollars in the area below Baton Rouge since World War II, drawing subsidiary industries not only to the riverbanks but to the surrounding countryside as well. States bordering the lower Mississippi River are changing from an agricultural to an industrial economy. Significantly, this has been the case for Louisiana along the deep channel between Baton Rouge and New Orleans.

The United States is afforded its largest fresh-water supply by the Mississippi River, which has an average daily flow of over 300 billion gallons of water in its lower reaches. This is more water than is used daily in the entire country. With industry constantly seeking a better means of already low-cost waterway shipping, substantial increases in traffic are foreseen on this reach of the river.

Shipping traffic on the 40-foot deep channel between Baton Rouge and New Orleans has appreciably increased during the decade of the 1960's, as shown on table 3.

TABLE 3

MISSISSIPPI RIVER COMMERCE: BATON ROUGE TO NEW ORLEANS, FOR SELECTED YEARS
(1,000 tons)

Year	Oceangoing	Internal (barge)
1960	21,684	30,671
1965	28,524	52,254
1970	44,430	87,240

Source: Waterborne Commerce of the United States, Calendar Year 1970, Part 2; Department of the Army, Corps of Engineers, Lower Mississippi Valley Division; Vicksburg, Mississippi.

The significant increase in traffic after 1965 coincides with the deepening of the channel from a 35-foot to a 40-foot depth, the initial phase of which was about 85 percent complete by late 1963.

The deeper channel was completed from the Gulf of Mexico to Baton Rouge, Louisiana, the summer of 1965. These tonnage figures for Baton Rouge and New Orleans compare favorably with those for some other larger port cities along the Mississippi, such as St. Paul, St. Louis, and Memphis, for which the figures are shown in table 4.

TABLE 4

COMMERCIAL TONNAGE FOR SELECTED
MISSISSIPPI RIVER PORT CITIES, 1960 AND 1970
(1,000 tons)

City	1960	1970
St. Paul	3,991	4,760
St. Louis	9,092	10,443
Memphis	6,336	10,018
Baton Rouge	52,355	131,700
New Orleans	79,813	157,597

Source: Waterborne Commerce of the United States, Calendar Years 1969 and 1970, Part 2; Department of the Army, Corps of Engineers, Lower Mississippi Valley Division, Vicksburg, Mississippi

Increases in tonnage below Baton Rouge are attributable to a great extent to the expanding of crude oil refinery capacities, the locating of new petrochemical plants, and the expanding of other existing facilities in the port area of Baton Rouge. This growth has elevated the Port of Baton Rouge to a position as the second largest port in Louisiana and seventh in the United States.

Oceangoing traffic in the reach from New Orleans to the Head of Passes has also increased and has enabled the Port of New Orleans to consistently maintain its position as the second largest port in the United States. Data for the volume of this traffic for years comparable to those given above in tables 3 and 4 are found in table 5.

TABLE 5

MISSISSIPPI RIVER COMMERCE: NEW ORLEANS
TO HEAD OF PASSES, FOR SELECTED YEARS
(1,000 tons)

Year	Oceangoing	Internal (barge)
1960	45,861	33,952
1965	64,147	47,865
1970	93,822	63,775

Source: Waterborne Commerce of the United States, Calendar Years 1960 through 1970, Part 2; Department of the Army, Corps of Engineers, Lower Mississippi Valley Division, Vicksburg, Mississippi

These figures show that both categories of trade, oceangoing and internal, have increased at substantial rates during the 1960's. Based on projections of population and industrial-commercial growth for the New Orleans area, this traffic promises to show an increasing rate of expansion during the 1970's.

Both banks of the Mississippi River in the New Orleans area provide excellent plant sites for new industry. As stated earlier, the river offers an abundant supply of water for cooling and processing, and the coastal and offshore oil and gasfields offer fuel sources for existing and future industry. The river from Baton Rouge to the Head of Passes also offers easy access to bulk terminals which handle a variety of commodities for export and/or import. Specific examples of types of industry currently located on the river are chemical, rubber, petroleum products, non-metallic ores, sand and gravel, metal products of all types, building materials, and salt and sulphur processing.

c. Commercial fishing. The general coastal waters around the mouth of the Mississippi River support a significant commercial fishery of great value to the economy of Louisiana. Lindall et al. (1972)[9] summarized the production and value of the major estuarine-dependent fishes by hydrologic unit (figure 1) for the period 1963-1967 (table 6). Combined production of fishes and shellfishes from

[9]Lindall, W.N., Jr., J.R. Hall, J.E. Sykes, and E.L. Arnold, Jr. 1972. Louisiana coastal zone: analyses of resources and resource development needs in connection with estuarine ecology. Sections 10 and 13, Fishery Resources and Their Needs. Unpub. rep. to US Army Corps of Engineers, New Orleans District, Contr. No. 14-17-002-430. 323 p.

TABLE 6--Production and value of major commercial estuarine-dependent fisheries by hydrologic unit. Data based on 5-year (1963-67) average annual harvests and 1967 exvessel prices (from Lindall, et al., 1972)

Species	Hydrologic Unit								
	I and II[1]	III	IV	V	VI	VII	VIII	IX	Total
Menhaden									
Production[2]	159.33	30.20	335.83	64.80	28.30	41.10	12.40	41.10	713.06
Value[3]	2.26	0.43	4.77	0.92	0.40	0.58	0.18	0.58	10.12
Shrimp									
Production	18.30	3.70	20.00	22.91	2.00	3.20	0.50	2.90	73.51
Value	6.64	1.34	7.25	8.31	0.73	1.17	0.19	1.05	26.68
Croaker									
Production	4.33	1.20	4.93	7.63	1.10	2.11	0.30	2.11	23.71
Value	0.07	0.02	0.08	0.14	0.02	0.04	0.01	0.04	0.42
Oyster									
Production	4.68	0.00	4.14	0.85	0.00	0.01	0.00	0.29	9.97
Value	2.06	0.00	1.82	0.37	0.00	0.005	0.00	0.13	4.39
Blue Crab									
Production	3.66	0.03	2.46	1.12	0.28	0.06	0.04	0.62	8.27
Value	0.32	0.003	0.22	0.10	0.03	0.005	0.004	0.05	0.73
Spot									
Production	0.57	0.23	0.85	1.58	0.22	0.53	0.11	0.53	4.62
Value	0.01	0.004	0.01	0.03	0.004	0.01	0.002	0.01	0.08
Catfish and Bullheads									
Production	0.16	0.00	1.94	0.41	1.79	0.07	0.22	0.003	4.59
Value	0.03	0.00	0.33	0.07	0.30	0.01	0.04	0.001	0.78
Seatrout									
Production	1.41	0.21	1.08	0.31	0.18	0.42	0.08	0.42	4.11
Value	0.07	0.01	0.05	0.01	0.01	0.02	0.003	0.02	0.19
Red Drum									
Production	0.23	0.02	0.12	0.13	0.005	0.00	0.00	0.02	0.53
Value	0.04	0.003	0.02	0.02	0.001	0.00	0.00	0.003	0.09
Total									
Production[2]	192.68	35.59	371.35	99.74	33.87	47.50	13.65	47.99	842.37
Value[3]	11.50	1.81	14.55	9.97	1.50	1.84	0.43	1.88	43.48
Estuarine water[4]	1,764	163	314	419	153	323	13	134	3,283
Production, pounds/acre	109.2	218.3	1,182.6	238.0	221.4	147.1	1,050.0	358.1	256.6
Value dollars/acre	6.5	11.1	46.3	23.8	9.8	5.7	33.1	14.0	13.2

[1]Hydrologic Units I and II were grouped because of overlap of Breton and Chandeleur Sounds and probable overlap of catch designations therein
[2]Millions of pounds.
[3]Millions of dollars.
[4]Thousands of acres.

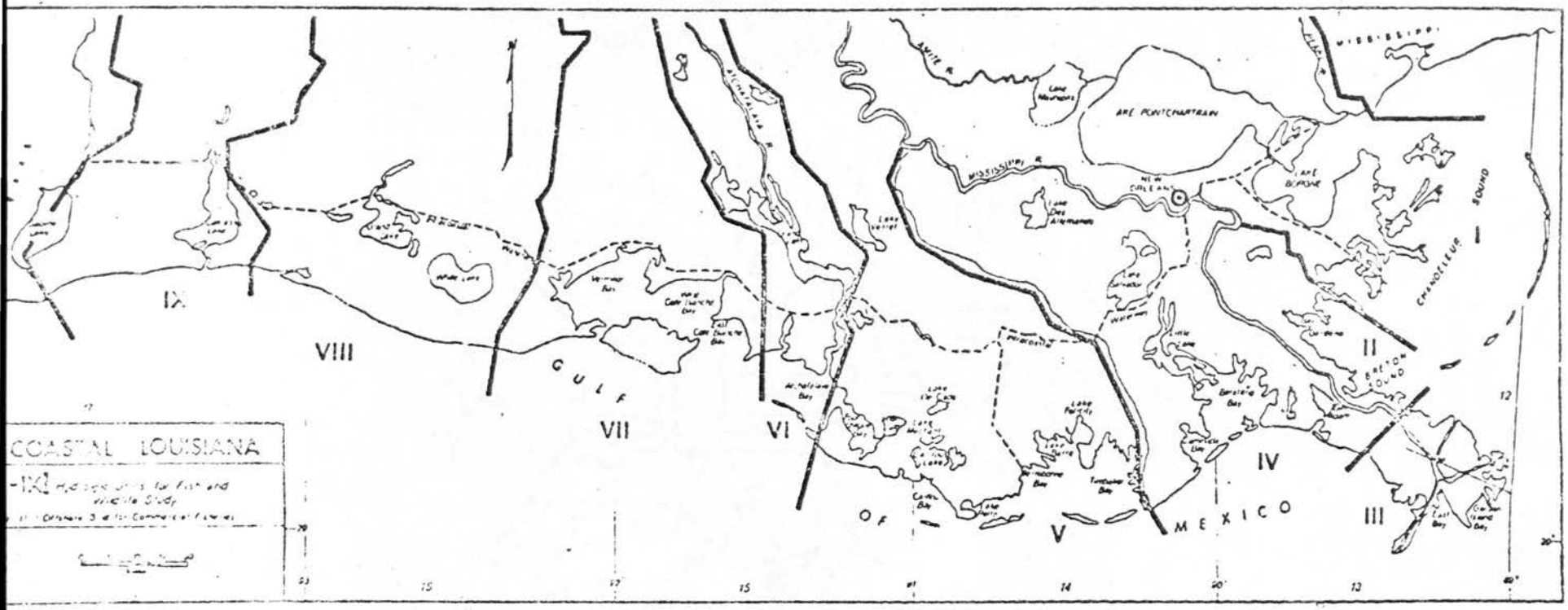

FIGURE 1 --Louisiana Coastal zone showing natural catchment basins (Hydrologic Units I-IX) offshore commercial fishing grids (12-17) and major bays, lakes, and rivers. (from Lindall et al 1972)

Hydrologics Units I, II, III, and IV (the units nearest the Mississippi River) averaged 599.62 million pounds, and $27.86 million per year during the study period. These values amounted to over 71 percent of the total pounds harvested and 64 percent of the total value of fishes and shellfishes harvested in Louisiana. Menhaden (mostly Brevortia patronus) led all finfish species in pounds (525.36 million) and dollar value ($7.46 million) in the four hydrologic units. Shrimp led all species in value amounting to $15.23 million annually over the study period.

More recent data indicate a tremendous increase in value from commercial fisheries in Louisiana. Commercial landings of fishes and shellfishes in Louisiana coastal and interior districts during 1970 were a record 1.1 billion pounds valued at $62.5 million (US Department of Commerce, 1972).[10] Louisiana led all other states in volume of catch and ranked third in value of United States landings. Harvest of shellfishes (oysters, shrimp, and hard blue crabs) totaled 109.8 million pounds valued at approximately $39.13 million. Finfish landings used for human consumption were 15.0 million pounds valued at $2.9 million while menhaden landings of 959.8 million pounds were recorded.

According to preliminary estimates by the National Marine Fisheries Service, the 1972 value of commercial fishery production landed in parishes along the Mississippi River was more than $17 million of the $72 million total for the state. A wide variety of fish and shellfish are landed at ports in the area; however, the majority of the value of commercial production is from the sale of shrimp, oysters, menhaden, and crabs. The following table illustrates the value (to the fisherman) of production landed in the parishes in which fishing is of significant economic importance.

TABLE 7

VALUE OF FISHING PRODUCTION
(To the Fisherman)

Plaquemines	$ 8,590,000
Jefferson	6,167,000
St. Bernard	1,739,000
Orleans	506,000
St. Charles	196,000
Iberville	183,000
	$17,381,000

[10]US Department of Commerce. 1972, Louisiana landings, annual summary 1970. In Current Fisheries Statistics No. 5794. National Oceanic and Atmospheric Admin., National Marine Fisheries Service, Washington, DC

d. Land use. Consideration of the data in table 8 indicates the patterns of general allocation of the land area of the 11 parishes for agricultural, industrial, and residential usage. From New Orleans upriver toward Baton Rouge, the percentage of parish land area that is committed to agricultural purposes increases. From a low figure of approximately 2 percent of land area classified as agricultural acreage for Jefferson and St. Bernard Parishes, the figures increase to 40+ percent for East and West Baton Rouge Parishes. This pattern of usage is largely explained by the topography of the parishes involved. In the lower reaches of the river, below St. John and St. Charles Parishes, the majority of land is low and marsh or semi-marshy and not very well suited to cultivation on a very extensive scale. Those parishes above St. John and St. Charles contain much larger percentages of land with sufficient elevation or levee protection which are suitable for agricultural development. For years prior to 1970, this same pattern of use existed uniformly for the 11 parishes involved; a trend has developed since the mid-1960's which indicates declining acreage devoted to agricultural pursuits.

The revised trend in agricultural acreage coincided with the basic completion and initial use of the currently authorized deepwater channel from Baton Rouge to New Orleans. As of November 1963, this project was about 85 percent complete but fully navigable since all initial dredging has been completed. The deeper channel was completed from the Gulf of Mexico to Baton Rouge, Louisiana, the summer of 1965. The presence of this deepwater channel induced the reallocation of lands bordering the river to industrial or commercial use, which offered a higher marginal rate of return. Continued and increasing acreage and production restrictions on crops basic to the area (i.e., surgarcane) accelerated the trend of relatively decreasing agricultural activity and increasing industrialization. All 11 parishes participated in this industrial growth; Ascension, Iberville, Plaquemines, St. Charles, and St. James Parishes especially enjoyed injections into their economies of new capital which represented significant increases in total capital stock. Of total investment made along the banks of the river in the 11-parish area during the period 1961 to 1971, approximately 66 percent took place in these five parishes.

Land being converted to industrial sites generally is adjacent to the river; recent residential development is mainly located near existing towns. Suburban or semirural development is also spreading along the river and is radiating out from larger population centers such as Baton Rouge and New Orleans.

TABLE 8

LAND-USE PATTERN (1970)

PARISH	TOTAL LAND[1] ACREAGE	INDUSTRIAL[2] ACREAGE	PERCENT OF TOTAL	AGRICULTURAL[3] ACREAGE	PERCENT OF TOTAL	URBAN-TYPE[4] ACREAGE	PERCENT OF TOTAL
East Baton Rouge	293,760	2,906	1.0	133,511	45.5	27,000	9.2
West Baton Rouge	129,920	525	0.4	55,334	42.6	3,300	2.5
Iberville	401,280	6,407	1.6	122,340	30.5	6,100	1.5
Ascension	192,640	9,623	5.0	64,135	33.3	7,500	3.9
St. James	161,920	10,158	6.3	56,900	35.1	3,200	2.0
St. John	160,000	763	4.8	22,556	14.1	4,300	2.7
St. Charles	184,320	10,111	5.5	33,653	18.3	5,500	3.0
Jefferson	211,840	1,500	0.7	8,951	4.2	33,000	15.6
Orleans	131,200	813	0.6	nil	nil	38,000	29.0
St. Bernard	328,960	704	0.2	7,112	2.2	7,000	2.1
Plaquemines	659,200	2,244	0.3	31,691	4.8	8,000	1.2
TOTAL	2,855,040	45,754	1.6%	536,183	19.0%	142,900	5.0%

[1]County and City Data Book, 1967, U. S. Department of Commerce.

[2]Survey of Industry from Baton Rouge to Venice, Louisiana, 1971, conducted by U. S. Army Corps of Engineers, New Orleans District. Industrial acreage shown includes only those sites lying immediately adjacent to the river and is not indicative of parish totals.

[3]Statistical Abstract of Louisiana, 1971.

[4]Estimates by U. S. Corps of Engineers, New Orleans District. Does not include industrial acreages shown elsewhere on table.

e. Population. State population increased by 11.9 percent between 1960 and 1970. Except for Iberville, St. James, and Orleans Parishes, each parish in the area showed population increases which equaled or exceeded the state figure; in most cases, parish increases were appreciably above the state level. Jefferson Parish led the group with a 61.7-percent increase, St. Bernard was next with 59.0 percent, and West Baton Rouge registered a 15.9-percent increase. The population of the 11 parish area as a whole increased by 15.9 percent.

In the 11-parish area, West Baton Rouge, Iberville, St. James, Orleans, and Plaquemines showed net migration losses for the 1960-1970 decade. Plaquemines shifted from a net in-migration parish for the 1950-1960 decade to a net out-migration parish. The other four parishes mentioned above experienced increasing rates of out-migration from the 1950-1960 decade. East Baton Rouge, St. Charles, Jefferson, and St. Bernard Parishes experienced decreasing in-migration rates while Ascension and St. John Parishes were the only parishes to enjoy in-migration rate gains.

With the exceptions of Iberville, St. James, and Orleans Parishes, total population gains were either equal to or above both the state and national levels of 11.9 percent and 13.3 percent, respectively, for the 1960-1970 decade. These population increases were directly related to the level of investment activity and economic growth in these parishes. Those which were experiencing the most rapid investment and economic growth (East Baton Rouge, Ascension, St. Charles, Jefferson, and St. Bernard) showed either increasing in-migration rates or above average in-migration rates for the entire 1950-1970 period.

Population data for 1960 and 1970 are shown in table 9.

In 1970, the average unemployment rate for the state was 6.2 percent, and only West Baton Rouge (8.0 percent), Iberville (9.5 percent), and St. James (6.6 percent) Parishes were above this figure in the study area. Most of the remaining eight parishes were significantly below the state average; most also compared favorably with the national unemployment rate of 4.9 percent for 1970.

Employment data and income data are shown in tables 10 and 11, respectively.

f. Industrial development. Table 12 gives a summary of industrial capital investment since 1946 immediately along the river in the 11 parishes. Significant growth in industrial facilities has occurred since completion of the deepwater channel to Baton Rouge in late 1962. Plans that are underway in separate parishes, especially in the vicinity of New Orleans and of Baton Rouge, promise to continue the favorable investment climate for the region.

TABLE 9

POPULATION DATA
1960 and 1970

PARISH	POPULATION TOTAL (x 1000) 1960	1970	%CHG	BY URBAN-RURAL (in %)	1960	1970	NET MIGRATION Rate (in %) 1950-1960*	1960-1970**	DENSITY (per land acre) 1960	1970
				URBAN	85.1	86.9				
E. Baton Rouge	230.06	285.17	23.9	RURAL	14.9	13.1	18.0	5.8	0.78	0.97
				U	39.2	38.9				
W. Baton Rouge	14.80	16.86	13.9	R	60.8	61.1	2.3	-8.4	0.12	0.13
				U	25.7	33.3				
Iberville	29.94	30.74	2.7	R	74.3	66.7	7.3	-13.0	0.07	0.08
				U	33.4	32.0				
Ascension	27.93	37.09	32.8	R	66.6	68.0	2.4	12.9	0.15	0.19
				U	17.8	32.8				
St. James	18.37	19.73	7.4	R	82.2	67.2	-3.8	-12.6	0.12	0.12
				U	47.9	51.8				
St. John	18.44	23.81	29.1	R	52.1	48.2	-2.5	7.6	0.13	0.15
				U	22.1	27.2				
St. Charles	21.22	29.55	39.3	R	77.9	72.8	24.0	15.7	0.11	0.16
				U	94.1	95.8				
Jefferson	208.77	337.57	61.7	R	5.9	4.2	65.7	38.1	0.80	1.43
				U	100.0	99.7				
Orleans	627.53	593.47	-5.4	R	-	-.3	-6.3	-16.3	4.93	4.71
				U	66.0	91.3				
St. Bernard	32.19	51.19	59.0	R	34.0	8.7	141.5	33.1	0.10	0.16
				U	34.5	28.3				
Plaquemines	22.55	25.23	11.9	R	65.5	71.7	25.0	-2.1	0.04	0.04
				U	86.5	87.7				
TOTAL	1,251.80	1,450.41	15.9	R	13.5	12.3	8.4	0.1	0.44	0.51

Source: U. S. Dept. of Commerce, Bureau of the Census, "Number of Inhabitants, Louisiana:", Census of Population, 1960, 1970.

* U. S. Dept. of Commerce, Bureau of the Census, "County and City Data Book", 1962.

** U. S. Dept. of Commerce, Bureau of the Census "General Demographic Trends for Metropolitan Acres, 1960 to 1970", Census of Population and Housing, 1971.

TABLE 10

EMPLOYMENT DATA
1960 and 1970*

PARISH		CIVILIAN LABOR FORCE	PERCENT UNEMPLOYED
East Baton Rouge	1960	83,703	6.1
	1970	107,422	4.5
West Baton Rouge	1960	4,296	7.4
	1970	4,982	8.0
Iberville	1960	8,671	10.3
	1970	8,863	9.5
Ascension	1960	8,233	9.7
	1970	11,420	5.4
St. James	1960	4,883	11.7
	1970	5,329	6.6
St. John	1960	5,244	10.0
	1970	6,682	5.4
St. Charles	1960	6,161	7.1
	1970	9,297	4.2
Jefferson	1960	72,658	4.6
	1970	127,048	3.7
Orleans	1960	237,064	5.6
	1970	221,532	5.8
St. Bernard	1960	10,143	4.4
	1970	18,423	4.9
Plaquemines	1960	7,010	4.9
	1970	8,229	3.9
TOTALS	1960	448,066	5.8
	1970	529,227	5.0

Source: General Social and Economic Characteristics, Louisiana, 1960 and 1970 Census of Population, U. S. Department of Commerce.

*Data for 1960 includes civilian labor force 14 years of age and older while data for 1970 includes civilian labor force 16 years of age and older.

TABLE 11

INCOME DATA
1959 and 1969

	MEDIAN FAMILY INCOME[1]		PER CAPITA INCOME[2]		
	1959	1969	1959	1969	
East Baton Rouge	$5,830	$9,627	$2,127	$3,340	
West Baton Rouge	4,037	6,920	1,077	2,041	
Iberville	3,125	6,251	1,150	3,278	
Ascension	3,877	7,894	1,064	2,625	
St. James	3,659	8,049	1,258	2,723	
St. John	4,079	8,275	1,191	2,339	
St. Charles	5,289	9,004	1,857	3,259	
Jefferson	6,061	10,235			
Orleans	4,807	7,445	2,132	3,524	New Orleans SMSA
St. Bernard	6,028	9,638			
Plaquemines	5,127	8,601	1,436	1,780	

[1]General Social and Economic Characteristics, Louisiana, 1970, U. S. Department of Commerce.

[2]Bureau of Economic Analysis, U. S. Department of Commerce, 1972.

TABLE 12

INDUSTRIAL DEVELOPMENT[1]

PARISH	INVESTMENT 1946-1960	PERCENT OF TOTAL 1946-1960	INVESTMENT 1961-1971	PERCENT OF TOTAL 1961-1971	PERCENT CHANGE BETWEEN TWO PERIODS	TOTAL INVESTMENT IN PARISH	PARISH PERCENT OF TOTAL FOR 25-YEAR PERIOD
East Baton Rouge	446,342,991	36.81	420,135,628	19.80	-5.87	866,478,619	25.99
West Baton Rouge			2,416,719	0.11		2,416,719	0.07
Iberville	76,673,635	6.32	261,177,876	12.31	240.64	337,851,511	10.13
Ascension	115,766,727	9.55	378,398,722	17.84	226.86	494,165,459	14.82
St. James	70,908,701	5.85	260,553,629	12.28	267.45	331,462,330	9.94
St. John the Baptist			71,612,976	3.38		71,612,976	2.15
St. Bernard	222,470,825	18.35	79,922,494	3.77	-64.08	302,393,319	9.07
St. Charles	106,181,049	8.77	334,991,811	15.79	215.49	441,172,859	13.23
Jefferson	129,622,299	10.69	75,650,762	3.57	-41.64	205,273,061	6.16
Orleans	16,701,300	1.38	75,483,676	3.56	351.96	92,183,976	2.77
Plaquemines	27,886,635	2.30	161,079,992	7.59	477.62	188,966,626	5.67
TOTAL	$1,212,554,160	36.37%	$2,121,423,285	63.63%	74.95%	$3,333,977,445	100.0%

[1]Survey of Industry from Baton Rouge to Venice, Louisiana, 1971, conducted by U. S. Army Corps of Engineers, New Orleans District; industrial data shown includes only those sites lying immediately adjacent to the river and is not indicative of parish totals.

9. ARCHEOLOGICAL/HISTORICAL/CULTURAL ELEMENTS.

The current National Register of Historic Places and the most recent supplement dated 2 October 1973, have been consulted and several historic or cultural places have been identified as being in the project area; and, none are affected by the project.

The first three historical sites listed below are located on the riverside of the levees and the others are located on the landside.

a. Fort Jackson. Fort Jackson is located in Plaquemines Parish, 4.5 miles east of Buras, Louisiana, on Louisiana Highway 23 on the west bank of the Mississippi River (see plate 1). An active military post from 1792 until 1920, Fort Jackson is a bastioned brick structure and, except for a few late 19th century additions, it appears to be little altered from its original state. Fort Jackson has been developed and is operated as a public park by the Plaquemines Parish Commission Council.

b. Fort St. Philip. Fort St. Philip, on the opposite or east bank of the Mississippi River, is also located in Plaquemines Parish, 4.5 miles northeast of Buras, Louisiana. Fort St. Philip was erected by the French in 1795. The fort was not regularly garrisoned after 1871. Today the site is in a primitive state, is not maintained, and is difficult to reach.

c. Fort Bute. The site of this fort is located in Iberville Parish at what was the junction of Bayou Manchac and the Mississippi River. During times of low water, artifacts from this site can be surface collected along the batture.

d. Fort de la Boulaye. This was the first fort built in Louisiana. In 1699 the only French settlement on the gulf was Fort Maurepas on Biloxi Bay. While Bienville was descending the Mississippi he met a 12-gun British man-of-war commanded by Captain Banks. Bienville was able to convince the English that the French had a fleet up river and the English turned around and sailed downriver (Davis, 1961; Dethloff and Begnaud, 1968). Four months later, the French, under Iberville, started building a small fort on the first solid land they found, which was 50 miles above the mouth of the river. The fort consisted of a 28-foot square cypress blockhouse with two 18-pound cannons and four 4-pound guns, surrounded by a stockade (Fortier, 1941). Bienville was in charge with 25 men. About 1705 it was abandoned because of hostile Indians and fell into disrepair. Even the site was lost until it was rediscovered in 1936 (Kane, 1944).

e. Fort St. Leon. This fort was located on the west bank at English Turn. Vaudreiul had the fort built in the 1740's (Dethloss and Begnaud, 1968). Carondelet strengthened it in 1795 but it was later abandoned. By 1814 it was in ruins with no magazine, barracks or cannon platforms. Jackson had earthworks built and batteries put in to guard the river at this point (Brooks, 1961).

f. Plaquemine lock. Plaquemine lock is located on the right bank of the Mississippi River levee in the town of Plaquemine, Louisiana, about 208.8 miles AHP. The lock was closed to navigation in 1961. The Plaquemine lock site was placed on the National Register of Historic Places on 19 May 1972.

g. Indian sites. There are no recorded Indian sites along the main channel or in the crowfoot of the delta. One historic site is known to have existed in Southeast Pass. The site of Balize (1722) was built at the mouth of the pass. Later, New Balize (1768) was built as a pilot town slightly farther upstream. The remains of these sites are subsurface today and dredging operations in their vicinity are not required.

This maintenance project affects none of the above-named sites.

10. MISCELLANEOUS ELEMENTS.

Two state operated wildlife management areas and a national wildlife refuge are located in the project area (see plate 1). The Delta National Wildlife Refuge, managed by the US Department of the Interior, is situated on the east side of the Mississippi River delta in the vicinity of Main Pass and Pass a Loutre. The refuge contains approximately 48,800 acres of deltaic marshes, passes, bayous, and canals. It was established in 1935 primarily as a sanctuary for large wintering populations of ducks and geese.

The refuge wetlands support a multitude of birdlife. At least 240 species of birds have been identified within the refuge boundary. Other wildlife species inhabiting the refuge include white-tailed deer, nutria, raccoon, mink, otter, cottontail rabbit, and the American alligator.

Interior marshes and waterways sustain populations of fresh-water fish such as alligator and spotted gar, blue and channel catfish, gizzard shad, largemouth bass, and crappie.

Oil and natural gas exploration and production activities are conducted on refuge lands. Oil field developments are designed to assure minimum damage to wildlife habitat.

The Pass a Loutre Waterfowl Management Area lies south of the Delta National Wildlife Refuge at the terminus of the Mississippi River delta. The 66,000 acre area has been under management by the Louisiana Wild Life and Fisheries Commission since 1921.

Extensive damage to the management area resulted from Hurricane Camille in August 1969. This tropical hurricane destroyed vegetation, wildlife, and buildings. Most of the floating mats of vegetation were uplifted and strewn across a large area resulting in increased water area.

Waterfowl hunting is the only hunting activity allowed. Mammals inhabitating the area such as raccoons and white-tailed deer are generally restricted to the pass banks. Commercial trapping is allowed with nutria comprising the bulk of the catch. Populations of other species of fish and wildlife are the same as those described for the Delta National Wildlife Refuge.

The Louisiana Wild Life and Fisheries Commission operates the Bohemia Wildlife Management Area which consists of approximately 33,000 acres and lies in Plaquemines Parish on the east side of the Mississippi River between Bohemia and Ostrica. The habitat of the area varies from saline marshes along Breton Sound to the higher tree ridges along the river. Public hunting opportunity is provided for squirrel, rabbit, deer, and waterfowl.

1. DREDGING.

As shown in table 1, maintenance dredging has been and currently is performed in the project area at regular intervals to accomplish and maintain the project dimensions. The method of dredging and the type of dredging equipment used varies with the area in which the dredging is performed. Except in South Pass, dredging is performed annually and the exact dredging period is dependent upon the time and duration of the high-water season. The material dredged is that which has been deposited since the last dredging. Dredged material is disposed upon approximately 725 acres of marsh and existing spoil banks Below Head of Passes (550 acres in Southwest Pass and 175 acres in South Pass). Disposal of dredged material on the banks is so planned, deposited, and drained as to alleviate impoundments of water on or on the landward side of the spoil banks and levees. There is no land disposal of dredged material on land Above Head of Passes. Spoil in this area is deposited on the underwater bar adjacent to the dredged channel for all locations except the harbor in New Orleans, where it is deposited riverward of the -50-foot contour. There is no disposal of dredged material on land Above Head of Passes. Pollutants on the river bottom are placed back into suspension. The dredging process and the disposal of dredged material effects an increase in turbidity in the river immediately downstream from the work area. Because of the large volume of flow, the high turbidity of Mississippi River water and the settling characteristics of the solids dredged, turbidity increases caused by dredging are not distinguishable 100 to 200 feet downstream. The materials dredged are primarily inorganic sands and silts deposited since the previous dredging--usually on an annual basis. Natural and manmade chemicals, that may be considered pollutants, are sometimes electrically and chemically bound to sediment particles. The mechanical action of dredging and mixing silt with large volumes of water may cause resuspension and redissolving of some constituents in the river water. The scouring and transporting of sediment by the natural flow of the river has a similar action of resuspending and dissolving chemical constituents that may be attached to silt particles. A comparison of the large volume of natural sediment transported by the river (178,000,000 cubic yards per year) and the annual dredging of the Mississippi River from Baton Rouge to below New Orleans (5,800,000 cubic yards per year) indicates that dredging is a minor contribution to the suspension and dissolving of chemical constituents from sediment sources. This natural condition plus the tendency of resuspended constituents to precipitate or attach to silt particles and settle or be transported, indicate a negligible impact on water usage of Mississippi River waters. The intent and purpose of current regulations of the US Department of Health,

Education, and Welfare (H.E.W.), Public Health Service, as well as those of other environmentally concerned Federal, state, and local authorities are included in the matrices of the navigation maintenance programs through the medium of environmental impact coordination. Vector problems that are of particular concern to H.E.W. are given full consideration.

The ratio of land to open water in the marshes of Louisiana has been decreasing for many years under the combined effects of compaction, subsidence, erosion, and certain construction works. In studies made for the US Army Corps of Engineers, Gagliano[11] has determined on net balance coastal Louisiana has been experiencing loss of marsh land at an annual rate of about 16 square miles. These marsh lands are among the most productive in the world. The deposition of dredged material on the marsh areas adjacent to the passes acts to balance a part of the annual loss and thus exerts a favorable impact on the coastal environment.

a. Baton Rouge to New Orleans. The eight channel crossings have previously been dredged to project dimension (-40 feet m.l.w.). All materials above this datum are shoaling that have taken place over a period of 1 or more years. This consists of sand, silt, clay, including trash, roots, stumps, logs, etc. The dredged material is relatively soft except at Red Eye Crossing where a clean hard-packed sand is encountered. The dredged material is placed in suspension and deposited in the river shoreward of the channel through a floating pipeline. There is no indication of material buildup.

Displacement and removal of logs and stumps during dredging operations destroy niches occupied by attached organisms, thus eliminating them as food sources for secondary consumers such as fish. The dredging process and the disposal of dredged material effect an increase in turbidity in the river downstream from the work area and covers some benthic organisms in the channel. However, this turbidity occurs only during the dredging period and does not significantly affect the total river fauna.

b. New Orleans Harbor. As shown in table 1, the average quantity of excavated material from New Orleans Harbor greatly exceeds that of the individual crossings. Dredging operations displace and kill benthic organisms in the dredged areas. The duration of turbidity in the river waters immediately below the Port of New Orleans is proportionately longer than that below the crossings but

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[11]Gagliano, Sherwood M., Hyuck J. Kwon, Robert A. Muller, Philip Light, Johannes L. Van Beek, Mohammed Al-Awady, Hydrologic and Geologic Studies of Coastal Louisiana, Coastal Studies Institute and Department of Marine Sciences, Louisiana State University, 1970.

does not significantly alter fish and zooplankton populations in the area. Here, as at the crossings, increases in turbidity persist only for the duration of the dredging period.

c. Southwest Pass and South Pass. In the Southwest Pass area, the dredged material is confined by a dike system on the left and right descending banks of the pass and the liquid effluent or waste water is returned to the Mississippi River (see plates 2, 3, 4, and 5). In the South Pass area, the dredged material is placed on either side of the channel to restore the narrow banks and restrict the flow to the channel (see plate 6). Effluent from the diked areas is retained for a period of time which allows most of the heavier sands and clays to settle before it returns to the passes. Adequate placement and control of dredged material in confined areas prevent deterioration of water quality in the adjacent bays which serve as nursery areas for marine fish and shellfish.

Vegetation in the spoil areas is covered by the dredged material, but seeds and vegetative propagules[12] permit revegetation within one growing season. Roseau cane, rattlebox, Spartina spartinae and eastern baccharis reestablish on the spoil area. These plants complete their life cycle, produce seed, and are covered again during the next dredging operation. There is a temporary loss of habitat for faunal species.

d. Southwest Pass and South Pass Bar and jetty channel. Dredging in these areas is accomplished by either of two applicable methods using hopper dredges as indicated hereinbelow. The work consists of removing shoal material above -40 feet m.l.g. in the Southwest Pass bar area and lower jetty channel, and shoal material above -30 feet m.l.g. in the South Pass bar, plus 2 feet of overdepth throughout a bottom width of 600 feet. At high river stages, when currents are strong, the agitation method (see paragraph 5, Appendix C) of dredging is used. When using the agitation method, dredged material is transported into the gulf by the river currents. At low river stages, it is necessary to employ hopper dredges in a dredge-and-haul method for transport of shoal materials. Dredged-and-hauled materials from Southwest Pass are dumped outside of the -45-foot contour in the gulf, and dredged-and-hauled materials from South Pass are dumped outside of the -35-foot contour in the gulf, at least 2,000 feet outside of the entrance channels. Dredging operations, whether agitation or dredge-and-haul, disrupt bottoms and create increased turbidities in waters entering the gulf. The impact or extent of these increased turbidities depends upon the stage of the river during dredging operations. At high flow stages the increase in turbidity is much less than that experienced during periods of low flow. Turbidities during the very low flow periods

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[12]Propagules--any vegetative or fruiting body which maintains or continues the growth processes of a plant.

may be sufficient to shade out some phytoplankters and thus effectively decrease overall photosynthesis in the immediate area. However, the increase in turbidity is temporary and only occurs during the actual dredging operation. Dredged material which is dumped in open waters covers and smothers the resident benthic populations in the area on which the excavated material is placed. Dumping of dredged material also increases turbidity in the immediate area of disposal.

2. ECONOMIC AND INDUSTRIAL IMPACTS.

The maintenance of the Mississippi River between Baton Rouge and the Gulf of Mexico provides transportation benefits from the movements of bulk liquid and dry cargos in larger tankers and bulk carriers. The total annual benefits which are realized from the maintenance of a 40- by 500-foot channel are estimated at $144,400,300.

Maintenance of this deep channel provides access to the Port of New Orleans and of Baton Rouge by oceangoing ships. The banks of the river, especially in the vicinities of Baton Rouge and New Orleans, are therefore prime potential industrial-commercial sites. The Louisiana parishes which border the river between New Orleans and Baton Rouge enjoy direct economic benefits from the project. These benefits will grow in the future. Benefit effects extend throughout the New Orleans and Baton Rouge greater trade areas and encompass almost all of Louisiana and parts of Alabama, Mississippi, and Texas. Although the volume of trade and commerce induced by this deepwater channel represents extended economic gain throughout the Mississippi River system, the immediate impact is more limited to the New Orleans-Baton Rouge reach of the river.

Because the project has been a primary contributing factor in the development of the economic base of the area, secondary economic and social impacts of maintenance of the project will be experienced as a continuum of the development which has been in progress for several decades. Regional and community growth and added employment opportunities will tend to close the gap in the regional economy relative to that of the Nation. It is likely that much of the area along the river between Baton Rouge and New Orleans, now relatively sparsely populated and devoted to agricultural pursuits, will be converted to industrial and residential development. Some displacement of farms will result as the land is devoted to activities which yield a higher economic return. Some crowding of population is suggested; however, the migratory pattern for the largest urban center has become one of outmigration from the central city. Industrial development and attendant residential and commercial centers will continue to disseminate throughout the entire area. Communities will be faced with added problems in the disposal of liquid and solid wastes. Regulatory prescriptions and proscriptions will be required to deal with industrial and residential pollution.

3. HISTORICAL SITES.

In evaluating the Criteria of Effect as defined by paragraph 7c of Engineer Regulation 1105-2-11 and current guidelines implementing Section 106 of the National Historic Preservation Act of 1966, maintenance of the Mississippi River to specified depths will affect none of the National Register properties. Further, maintenance dredging will not conflict with Federal responsibilities in implementing Executive Order 11593 dated 15 May 1971, entitled "Protection and Enhancement of the Cultural Environment."

On 28 August 1973, an aerial survey was conducted in the project area of the main channel of the Mississippi River from New Orleans to the crowfoot delta. This survey was conducted by Robert W. Neuman, Curator of Anthropology, Louisiana State University, Baton Rouge, Louisiana. All the known sites in the project area from New Orleans to the crowfoot delta are historic structures. From north to south they consist of: Fort St. Leon (1746) along the right bank of the lower end of the English Turn Bend; Fort de la Boulaye (1700) along the left bank near Poverty Point, and Joe Gravolet Canal; Fort St. Philip (1786) near the mouth of Bayou Plaquemines, also on the left bank; and Fort Jackson (1824) across the river from Fort St. Philip. It is expected that these sites will not be damaged or altered by the project operations. There are no recorded Indian sites along the main channel or in the crowfoot of the delta. One historic site is known to have existed in Southeast Pass. The site of Balize (1722) was built at the mouth of the pass. Later New Balize (1768) was built as a pilot town slightly farther upstream. The remains of these sites are subsurface today and dredging operations in their vicinity are not required.

Records at Louisiana State University, Department of Geography and Anthropology, show only one historical site between Baton Rouge and New Orleans whose archeological deposit may be affected by the project. The site of Fort Bute (1765) is located in Iberville Parish at what was the junction of Bayou Manchac and the Mississippi River. During times of low water, artifacts from this site can be surface collected along the batture.

4. MITIGATION. Care will be taken during dredging operations to minimize environmental disruption. Industrial, commercial, and domestic users who discharge effluent into the Mississippi River will be required to conform with all regulations governing the discharges of such waste. Care will be exercised on the dredges in the handling and storage of hazardous materials to prevent accidental spillage or usage that would result in water pollution.

Dredge operators shall not be allowed to pollute lakes, ditches, rivers, bayous, canals, or waterways with fuels, oil, bitumens, chemicals, insecticides, herbicides, or other similar materials harmful to fish, shellfish, or wildlife, or such materials which may be a detriment to outdoor recreation. The methods and locations of disposal of materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., shall be such that harmful debris will not enter bays, channels, and passes. Close contact will be maintained with Federal and state conservation agencies to insure consideration and adoption of all feasible measures necessary to satisfy fish and wildlife preservation and public-use needs.

SECTION IV--ANY ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

1. GENERAL.

Maintenance dredging has been, and currently is, performed in the project area at regular intervals to accomplish and maintain the project dimensions. Except in South Pass, the dredging is performed annually. The material dredged is that which has been deposited since the last dredging, and is actually only a recycling or moving of the natural sediments and bedload of the river.

2. BATON ROUGE TO NEW ORLEANS.

The dredged material is placed in the river shoreward of the channel through a floating pipeline. The adverse impacts are temporary increases in turbidity and some displacement and smothering of benthic organisms.

3. NEW ORLEANS HARBOR.

The dredged material is placed in deep water beyond the -50-foot m.l.g. contour through a floating pipeline. There is no apparent adverse effect on water quality at the work area. The increase in ambient turbidity caused by cutterheads is minimal. The adverse impacts are similar to those at the individual crossings but are more extensive due to the greater extent of dredged area and volume of dredged material. Disruption of bottoms and increase in turbidity of waters in the immediate dredging area are the primary impacts.

4. SOUTHWEST PASS AND SOUTH PASS.

In the Southwest Pass area, the dredged material is confined by a dike system on the left and right descending banks of the pass and the liquid effluent is returned to the Mississippi River (see plates 2, 3, 4, and 5). In the South Pass area, the dredged material is placed on either side of the channel to restore the banks and restrict the flow to the channel (see plate 6). The reach requiring dredging in South Pass extends below the Port Eads to the gulf. In this reach, the banks are very low and narrow; they would not support spoil dikes of sufficient heights to adequately return dredged material. It is recognized that the aquatic life experiences adverse effects during periods of induced turbidity and some benthic organisms are smothered and displaced, but these impacts are localized in nature near dredging operations.

Vegetation in the passes is covered during maintenance dredging. Reestablishment of similar or the same species occurs within one or two growing seasons. The increase in elevation due to the dredged material favors those species which can more readily adapt to this condition.

5. SOUTHWEST PASS AND SOUTH PASS AND JETTY CHANNELS.

The dredged material from the Southwest Pass Bar is hauled and dumped beyond the -45-foot contour of the gulf, and the material from the South Pass bar is hauled and dumped beyond the -35-foot contour of the gulf, at least 2,000 feet west of the gulf entrance channel. Some increase in turbidity occurs during either hopper or agitation dredging activities. Also, the benthic fauna at dumping sites in open water are smothered and destroyed.

In general, the dredging activities of the maintenance work are not a great departure from the normal silting and scouring activities.

The on-shore placement of dredged materials on approximately 725 acres BHP is detrimental to the existing vegetative communities. The destruction of these plants removes the productivity to which they are contributing, either directly or indirectly, to the existing terrestrial and aquatic faunas. However, these plant communities would not exist if dredged material were not placed along the channel due to subsidence which is rapidly occurring in the area.

1. GENERAL.

Alternatives to the proposed action are limited to alternative procedures for the disposal of dredged material and to "no-action." The apparent alternative of maintaining the project to lesser dimensions is not a viable one in that any significant reduction in channel dimensions could have serious implication with respect to marine safety and would gravely impair the ability of the Ports of New Orleans and Baton Rouge to serve their navigation functions. Unless the dimensions were reduced very substantially, the reduction in environmental impact would, in the long run, be nominal in magnitude. Furthermore, it would be pointless to consider in detail alternatives which clearly involve impacts more extensive and severe than would be associated with the proposed action. On this basis, land disposal outside the Southwest and South Pass reaches must be excluded from the list of practical alternatives. The alternatives are discussed below.

2. ALTERNATIVE DISPOSAL PROCEDURES.

a. Baton Rouge to New Orleans. The material dredged in this reach, which is currently disposed of elsewhere within the river's cross section, could be disposed of in the deep waters of the Gulf of Mexico, provided either that the dredging be accomplished by seagoing hopper dredge or that the dredged material be placed on barges and transported to deep-water dumping sites. A typical hopper dredge has a capacity of 3,000 cubic yards, and current operating cost averages about $10,000/day. In some seasons, the dredging required in this reach exceeds 4 million cubic yards. In such years, if maintenance were done by hopper dredge, some 1,300 trips to deep water, an average round trip distance of about 300 miles, would be required. To accomplish the work within one season would require a large flotilla of hopper dredges, so large as to impact normal navigational usage of the river. Similar problems would attend the use of barge tows for deep-water disposal, and in addition, there would be the problem of safe navigation of barge tows in the open sea. Furthermore, there is little to recommend deep-water disposal over the current method insofar as environmental impacts are concerned.

b. New Orleans Harbor. In this reach, dredged material is currently deposited in deeper parts of the river's cross section. The material could be transported to deep-water dumping grounds in the gulf. Practical difficulties and costs similar to those previously discussed under the Baton Rouge-New Orleans reach are applicable to this reach, though to a somewhat lesser degree

since the quantity of material and the haul distance could both be less. Also, the hopper dredge would be difficult to maneuver in the restricted areas of the harbor, to the extent that some shoal areas could not be reached. There is, furthermore, the same lack of a clear-cut environmental advantage between the current method of disposal and the deep-water disposal.

c. Southwest and South Pass. Two alternatives to current disposal procedures in the reach are possible--deep-water disposal and use of open-water disposal sites in the shallow waters adjacent to Southwest and South Passes. While a shorter haul distance would be involved in deep water disposal, the very large seasonal volumes render this procedure subject to the practical difficulties previously described. If shallow water sites were used for disposal in lieu of land sites, these areas would be lost as habitat for fish and shellfish, but could in due course provide habitat for birds and other animals.

d. Southwest Pass and South Pass Bar and jetty channels. Dredged material for this reach is currently disposed of in deep water by hopper dredge. No reasonable alternatives which offer any substantial reduction in environmental impact are available.

3. NO-ACTION.

The impacts of failure to maintain the project fall into three broad categories: physical, biological, and economic. The various impacts in each category are identified and described below:

a. Physical.

(1) Through sedimentation in a single high-water season, the navigable depths at Southwest Pass Bar and the various crossings in the Mississippi River would shoal to -30 feet. The navigable depth across the South Pass Bar could shoal to -25 feet. The New Orleans Harbor would shoal heavily.

(2) Within a few years, the Southwest and South Pass Bars would shoal to navigable depths of -12 to -15 feet. Controlling depths in the passes and the river would shoal to about -20 feet.

(3) The "no-action" alternative would exert negligible impact on effectiveness of the flood control works on the lower Mississippi and Atchafalaya Rivers.

b. Biological. The deleterious effects of displacement and smothering of benthic population and increase in turbidity of waters immediately downstream of the areas dredged would be minimized.

Existing plant communities on designated spoil areas along the passes would not be destroyed by the smothering action of the dredged material, and the productivity which they contribute to the terrestrial and surrounding estuarine complexes would not be periodically lost. Over time, however, the deprivation of nourishment in the form of dredged material would accelerate the effects of natural forces in destroying the existing lands and productivity from vascular plants would be progressively reduced.

c. Economics and social factors. The many grain elevators and petroleum and chemical plants located along the Mississippi River require large tankers and/or bulk carriers to move their raw materials and products efficiently. Today, a 40-foot channel is available at nearly all major ports and the demand for deeper channels is growing as the shipping industry moves to take advantage of the economies of scale.

The industrial development below Baton Rouge as we know it today, would not have occurred, and additional development would not be considered without continued dredging. Without the project, the existing industrial development would decline. The Port of New Orleans, largest business in the State of Louisiana, would be placed in jeopardy. Reduced employment opportunities would result in unemployment and economic hardship. The social well-being of much of the Mississippi River Valley and, in particular, the project area would be seriously impaired by the concomitant loss of a sense of security. The national economic base would be weakened and the defense posture would be subverted.

SECTION VI--THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Maintenance dredging of the project area provides immediate and long-term uses of man's environment by improving conditions to meet his economic requirements. Should it be determined, at a later date, that an increase in depth is justified, the channel could be enlarged as necessary. The maintenance of the Mississippi River between Baton Rouge and the Gulf of Mexico provides transportation benefits that could not be realized if the project dimensions are not maintained. The project is planned primarily as maintenance dredging, but long-term benefits are also realized in that man's environment is thus controlled along the river. Future generations will enjoy benefits accruing from the project. Protection and enhancement of lives and property will continue as the dredging continues. There is no conflict between the short-term uses of man's environment and the maintenance and enhancement of long-term productivity.

SECTION VII--ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

Maintenance dredging results in irreversible and irretrievable commitments of natural resources in the marsh areas of Southwest and South Passes. Existing vegetative communities are lost with each dredging cycle. Existing benthic communities are also lost. The investment in manpower and funds for maintenance of the project area to project dimensions represents a permanent commitment.

1. PUBLIC PARTICIPATION.

The draft environmental impact statement was made available to the general public requesting their comments.

2. GOVERNMENT AGENCIES.

The draft environmental statement was sent to the following governmental agencies requesting their comments. Their comments are summarized below and copies of their letters are attached to this environmental statement.

a. Federal agencies.

(1) US DEPARTMENT OF THE INTERIOR, ASSISTANT SECRETARY-PROGRAM POLICY.

Comment: The assessment of the project's impact on fish and wildlife resources is adequately discussed.

Response: Noted.

Comment: We anticipate there will be no effect as a result of the proposed action upon any existing or proposed unit of the National Park System, nor upon any site eligible for registration as a National Historic, Natural or Environmental Education Landmark.

Response: Noted.

Comment: This project seems to involve only areas already impacted by the dredging of existing ship channels. However, some consideration should be given to possible impacts on archeological resources by the spoil from maintenance dredging. To state, as on page 54, that no archeological resources are involved is misleading because no qualified professional archeologist has surveyed the spoil deposit area to determine what resources exist. The results of such a survey should be noted in the final statement.

Response: A qualified professional archeologist has now surveyed the spoil deposit area and the results of this survey are included in Section III, paragraph 3 of this final statement.

Comment: Significant adverse environmental impacts related to the geology and hydrology of the area are not anticipated.

Response: Noted.

(2) ENVIRONMENTAL PROTECTION AGENCY, REGIONAL ADMINISTRATOR.

Comment: EPA has no objections to the proposed action as described in the draft impact statement. The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Response: Noted.

(3) US DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE.

Comment: In our review of the draft statement, we find no adverse effects which will result from the project on agculture other than providing opportunity for further industrial development along the river decreasing agricultural activity on some of the better soils of this area. Industrialization will more than offset this loss by providing jobs and cheap transportation for products that move out of a high agricultural production area to foreign markets.

Response: Noted.

Comment: The adverse environmental effects as well as the economic elements are well described.

Response: Noted.

Comment: Page 56, 2d paragraph--In the South Pass area the dredged material is placed on either side of the channel. Could the liquid effluent or dredged material be contained as prescribed in the Southwest Pass until the heavier clays and sands settle before it passes into the adjacent bays and estuaries? This would prevent deterioration of the water quality in these areas and the adverse impact on benthic organisms.

Response: As now set forth in Section IV, paragraph 4 of this statement, the attenuated nature of the lands along South Pass makes construction of dikes impracticable.

Comment: Other comments are as follows:

1. Page 35, table 5, 4th column, 6th line - 4.8 percent as shown should be .48 percent.

2. Page 20, 2d paragraph, last sentence should include small grain and rice in the crops that are grown.

Response: The final statement has been revised accordingly.

(4) US DEPARTMENT OF COMMERCE, DEPUTY ASSISTANT SECRETARY FOR ENVIRONMENTAL AFFAIRS.

Comment: Under Existing Environmental Setting, subsection g, Zoological Elements, some of the salt-water marsh species of fish are listed; however, there is no discussion of relative abundance or harvest. Also, there is no mention of the species inhabiting the open water areas around the passes and other parts of the lower delta. A thorough discussion of the fishing harvest from the project area should be presented, using data from sources such as Lindall, Hall, Sykes, and Arnold (1971) and Current Fisheries Statistics Nos. 5721 (1971) and 5794 (1972). The catches from Hydrologic Unit III, as well as Units II and IV of Lindall, et al., (1971) should be discussed.

Response: Such information has been incorporated into Section II, paragraph 8c of this statement.

Comment: In subsection h, Economic Elements, the value of the commercial fishery in the project area should be presented.

Response: A description of the commercial fishery in the project area is included in Section II, paragraph 8c of this statement.

Comment: With regard to Coordination With Others, the frequency of future coordination of spoil disposal plans with Federal and state fishery agencies under the Fish and Wildlife Coordination Act, as amended, should be discussed.

Response: The Fish and Wildlife Coordination Acts do not require that plans for disposal of dredged material from maintenance dredging be formally coordinated with the Federal or state agencies. We do, however, maintain a continuing dialogue with the Federal and state agencies having responsibilities in the area of fishery resources, and through this dialogue receive and consider their concerns with respect to such matters. Plans for disposal of construction dredged material are formally coordinated with Federal and state fishery agencies. If a dredge disposal plan, other than that presented by the US Army Corps of Engineers, is proposed by a firm to whom a construction dredging contract was awarded, that contractor is required to coordinate his disposal plan with these agencies prior to any dredging operations.

(5) US DEPARTMENT OF TRANSPORTATION, COAST GUARD.

Comment: No objections.

Response: Noted.

(6) US DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE, REGION VI.

Comment: Reviewed with no objections.

Response: Noted.

BUREAU OF COMMUNITY ENVIRONMENTAL MANAGEMENT (A Bureau of HEW).

Comment: The placement of dredged spoil on approximately 725 acres of marsh and existing spoil banks, should be effected with adequate drainage to prevent ponding of water on berms or behind spoil banks, levees, and/or dikes.

Response: The system for handling spoil where disposal is on land which is described in Section III, paragraph 1 of this statement, does provide for such drainage.

Comment: Further it is recommended that all such disposition of spoil material be in accordance with state and local requirements, supplemented by the appropriate health guidelines in the publication: Prevention and Control of Vector Problems Associated with Water Resources (Public Health Service Monograph, January 1965).

Response: As now indicated in Section III, paragraph 1, of this statement, plans for spoil disposal are made to conform to applicable regulations.

(7) US DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, REGIONAL ADMINISTRATOR VI, REGION VI, New Orleans Area Office.

Comment: We conclude that the dredging activities will not have any significant adverse effect on the environment around communities situated near the river. Also, it is anticipated by the Corps of Engineers and concurred in by my review that the resultant of the navigation channel down the river cannot help but have a positive effect on the Ports of Baton Rouge and New Orleans and the surrounding economic community.

Response: Noted.

(8) ADVISORY COUNCIL ON HISTORIC PRESERVATION.

Comment: Your draft environmental statement appears adequate regarding our area of expertise and we have no further comments to make.

Response: Noted.

b. State agencies.

(1) LOUISIANA DEPARTMENT OF PUBLIC WORKS.

Comment: We have no comments or suggestions to offer relative to modifications of your statement.

Response: Noted.

(2) LOUISIANA DEPARTMENT OF CONSERVATION.

Comment: I concur in the recommendation and can see no ill effect from the proposed dredging operations.

Response: Noted.

(3) LOUISIANA STATE UNIVERSITY, DEPARTMENT OF GEOGRAPHY AND ANTHROPOLOGY.

Comment: I note the omission of one, and possibly two most important historic forts which could become involved with the project activities. They are Fort Saint Leon and Fort de la Boulaye. Both are located in Plaquemines Parish.

Response: Coverage of these two forts is now included in Section II, paragraphs 9c and 9d.

(4) LOUISIANA DEPARTMENT OF ART, HISTORY, AND CULTURAL PRESERVATION.

Comment: At this time, we have no reason to believe this project will affect any sites on the National Register of Historic Places in the vicinity of the project, nor any sites actively under consideration for nomination to the National Register.

Response: Noted.

(5) BOARD OF COMMISSIONERS OF THE PORT OF NEW ORLEANS.

Comment: We find no significant detrimental effects which will result from the project on the quality of the human environment.

Response: Noted.

c. No comments were received from the following Federal, state, or local agencies:

(1) US Department of Commerce, Regional Director, National Oceanic and Atmospheric Administration, National Ocean Survey.

(2) US Department of Commerce, Regional Director, National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

(3) Area Supervisor, National Marine Fisheries Service, Water Resources Division.

(4) US Department of Transportation, Federal Highway Administration, Division Engineer.

(5) US Public Health, Fort Collins, Colorado.

(6) Office of Economic Opportunity.

(7) Louisiana Wild Life and Fisheries Commission.

(8) Louisiana State Parks and Recreation Commission.

(9) Louisiana Highway Department.

(10) Louisiana State Board of Health.

(11) Louisiana Commission on Intergovernmental Relations.

(12) Louisiana Stream Control Commission.

(13) Louisiana Planning Commission.

(14) Louisiana Forestry Commission.

(15) Louisiana Coastal Commission.

(16) Louisiana Land Office.

(17) Gulf States Marine Fisheries Commission.

(18) Louisiana Public Service Commission.

(19) Louisiana Advisory Commission on Coastal and Marine Resources.

(20) State of Louisiana, Department of Commerce and Industry.

(21) Board of New Orleans and Baton Rouge Steamship Pilot Commissioners for the Mississippi.

(22) Board of Examiners of Bar Pilots for the Port of New Orleans.

(23) Board of River Port Pilot Commissioners for the Port of New Orleans.

(24) Board of Commissioners of Orleans Levee District.

(25) Board of Commissioners of the Pontchartrain Levee District.

(26) South Louisiana Tidal Water Control Levee District.

(27) Capitol Region Planning Commission.

(28) Regional Planning Commission for Jefferson, Orleans, St. Bernard, and St. Tammany Parishes.

(29) Ascension Parish Police Jury.

(30) Assumption Parish Police Jury.

(31) Iberville Parish Police Jury.

(32) East Baton Rouge Parish City-Parish Council.

(33) Jefferson Parish Council.

(34) Mayor, City of New Orleans.

(35) Plaquemines Parish Commission Council.

(36) St. Bernard Parish Police Jury.

(37) St. Charles Parish Police Jury.

(38) St. James Parish Police Jury.

(39) St. John the Baptist Parish Police Jury.

(40) West Baton Rouge Police Jury,

3. CITIZEN GROUPS.

The draft environmental statement was sent to the following citizen groups requesting their comments. No comments were received:

a. Wildlife Management Institute - The Conservation Foundation.

b. Orleans Audubon Society.

c. Ecology Center of Louisiana, Inc.

d. National Audubon Society, Southwest Region.

e. National Sierra Club.

f. National Sierra Club, Delta Chapter, New Orleans.

g. National Sierra Club, Baton Rouge.

h. National Wildlife Federation.

i. Louisiana Wildlife Federation, Water Control Projects Committee.

j. Louisiana Wildlife Federation, Shreveport.

k. Louisiana Wildlife Federation, Baton Rouge.

l. Louisiana Wildlife Federation, Metairie.

m. Louisiana Wildlife Federation, Alexandria.

n. American Institute of Merchant Shipping.

o. League of Women Voters, Baton Rouge, Louisiana.

p. Environmental Defense Fund, Inc.

r. Louisiana Intracoastal Seaway Association.

APPENDIXES

APPENDIX A

A LIST OF THE VASCULAR PLANTS MENTIONED IN THIS STATEMENT

The plants recorded are from the batture, forest, and swampland, natural ridges and marshes of the project area.

The plants are listed alphabetically by the common name followed by the scientific name. Other common names of the same plant have been added in parenthesis.

Algae
Spirogyra sp.

Algae
Ulothrix sp.

Alligator weed
Alternanthera philoxeroides

American elder
Sambucus canadensis

Ash
Fraxinus tomentosa

Baldcypress
Taxodium distichum

Batis
Batis maritime

Beefsteak plant (thoroughwort)
Eupatorium serotinum

Bitter pecan
Carya aquatica

Blackberry
Rubus sp

Black mangrove
Avicennia nitida

Black rush
Juncus roemerianus

Box elder
Acer negundo

Bulltongue (arrowhead)
Sagittaria sp.

Bullwhip (bulrush)
Scirpus californicus

Butterweed
Senecio glabellus

Buttonbush
Cephalanthus occidentalis

Cattail
Typha latifolia

Camphor weed
Pluchea camphorata

Chickweed
Cerastium viscosum

Chickweed
Stellaria media

Coco (bulrush)
Scirpus robustus

Corn
Zea mays

Cotton
Gossypium hirsutum

Cottonwood
Populus deltoides

Cyperus
Cyperus spp.

Deciduous holly
Ilex decidua

Delta duck potato
Sagitarria platyphylla

Devil's walkingstick
Aralia spinosa

Dewberry
Rubus sp.

Dwarf spikerush
Eleocharis parvula

Duckweed
Lemna sp.

Eastern Baccharis
Baccharis halimifolia

Elephant's ear
Colocasia antiquorum

Elm, American
Ulmus americana

Fanwort
Cabomba caroliniana

Forb (clover)
Trifolium repens

Geranium, wild
Geranium carolinianum

Grass (six weeks grass)
Poa annua

Grass (Dallis grass)
Paspalum dilatatum

Greenbriar
Smilax sp.

Hackberry
Celtis laevigata

Haw (hawthorn)
Crataegus sp.

Honeysuckle, Japanese
Lonicera japonica

Horsetail
Equisetum hyemale

Johnson grass
Sorghum halapense

Maidencane
Panicum hemitomon

Marsh aster
Aster exilis

Marsh elder
Iva frutescens

Melon, wild
Cucumis sp.

Moonseed
Menispermum canadense

Morninglory, wild
Ipomoea sp.

Muscadine
Vitis rotundifolia

Navel orange
Citrus sp.

Nutgrass
Cyperus sp.

Oak, live
Quercus virginiana

Oak, water
Quercus nigra

Oak, willow
Quercus phellos

Oystergrass (cord grass)
Spartina alterniflora

Palmetto
Sabal minor

Panic grasses
Panicum spp.

Paspalum vaginatum

Pecan
Carya illinoensis

Pennywort
Hydrocotyle verticillata

Peppervine
Ampelopsis arborea

Pickerelweed
Pontederia cordata

Poison ivy
Rhus radicans

Pondweed
Potamogeton sp.

Poor man's pepper
Lepidium virginicum

Poplar, yellow (tulip tree)
Liriodendron tulipifera

Prickly ash
Zanthoxylum clava-herculis

Primrose, evening
Oenothera speciosa

Ragweed, giant
Ambrosia trifida

Rattan vine
Berchemia scandens

Rattlebox
Daubentonia texana

Red maple
Acer rubrum drummondii

Red mulberry
Morus rubra

Roseau cane
Phragmites communis

Roughleaf dogwood
Cornus drummondii

Saltgrass
Distichlis spicata

Satsumas
Citrus nobilis

Sawgrass
Cladium jamaicense

Sedge
Carex sp.

Sicklepod
Sesbania exaltata

Smartweed
Polygonum sp.

Softrush
Juncus effusus

Soybean
Glycine max

Spartina spartinae

Sugarcane
Saccharum officinarum

Sumpweed
Iva ciliata

Swamp privet
Forestiera acuminata

Sweetgum
Liquidambar styraciflua

Switchcane
Arundinaria tecta

Sycamore
Platanus occidentalis

Three-cornered grass
Scirpus olneyi

Trumpet creeper
Campsis radicans

Tupelo-gum
Nyssa aquatica

Virginia creeper
Parthenocissus sp.

Waterelm (planeratree)
Planera aquatica

Water hyacinth
Eichornia crassipes

Water lettuce
Pistia stratiotes

Watermeal
Wolffia sp.

Water-primrose
Jussiaea sp.

Wax myrtle
Myrica cerifera

Widgeon grass
Ruppia maritima

Wild grape
Vitis sp.

Wild millet
Echinochloa walteri

Willow, black
Salix nigra

Willow, sandbar
Salix interior

Wiregrass
Spartina patens

APPENDIX B

A LIST OF THE ANIMALS MENTIONED IN THIS STATMENT

The animals recorded are known to inhabit the project area on a resident or migratory basis.

The animals are listed alphabetically by the common name followed by the scientific name.

FISHES

Alligator gar
Lepisosteus spatula

Atlantic croaker
Micropogon undulatus

Black crappie
Pomoxis nigro-maculatus

Black drum
Pogonias cromis

Blue catfish
Ictalurus furcatus

Bluegill
Lepomis macrochirus

Bowfin
Amia calva

Buffalo
Ictiobus spp.

Channel catfish
Ictalurus punctatus

Crappie
Pomoxis spp.

Flathead catfish
Pylodictis olivaris

Gafftopsail catfish
Bagre marinus

Gizzard shad
Dorosoma cepedianum

Gray snapper
Lutjanus griseus

Gulf menhaden
Brevoortia patronus

Ladyfish
Elops saurus

Largemouth bass
Micropterus salmoides

Longear sunfish
Lepomis megalotis

Longnose gar
Lepisosteus osseus

Mosquitofish
Gambusia affinis

Paddlefish
Polyodon spathula

Pinfish
Lagodon rhomboides

Redear sunfish
Lepomis microlophus

Red drum
Sciaenops ocellata

Sailfin molly
Poecilia latipinna

Sea catfish
Arius felis

Sheepshead
Aplodinotus grunniens

Sheepshead
Archosargus probatocephalus

Shortnose gar
Lepisosteus platostomus

Southern flounder
Paralichthys lethostigma

Spot
Leiostomus xanthurus

Spotted gar
Lepisosteus oculatus

Spotted seatrout
Cynoscion nebulosus

Stingray
Dasyatis spp.

Striped mullet
Mugil cephalus

Warmouth
Lepomis gulosus

White bass
Morone chrysops

White crappie
Pomoxis annularis

Yellow bass
Morone mississippiensis

CRUSTACEANS

Blue crab
Callinectes sapidus

Shrimp
Panaeus spp.

River shrimp
Macrobrachium ohione

MAMMALS

Bobcat
Lynx rufus

Cottontail rabbit
Sylvilagus floridanus

Cotton rat
Sigmodon hispidus

Gray fox
Urocyon cinereoargenteus

Mink
Mustela vison

Muskrat
Ondatra zibethicus

Nine-banded armadillo
Dasypus novemcinctus

Nutria
Myocastor coypus

Opossum
Didelphis virginiana

Otter
Lutra canadensis

Raccoon
Procyon lotor

Red fox
Vulpes fulva

Striped skunk
Mephitis mephitis

Swamp rabbit
Sylvilagus aquaticus

Whitetailed deer
Odocoileus virginianus

BIRDS

American widgeon
Mareca americana

Black duck
Anas rubripes

Black-crowned night heron
(gros-bec)
Nycticorax nycticorax

Blue goose
Chen caerulercens

Blue-winged teal
Anas discors

Bobwhite
Colinus virginianus

Bufflehead
Glaucionetta albeola

Canvasback
Aythya valisineria

Cardinal
Richmondena cardinalis

Common snipe
Capella gallinago delicata

Coot
Fulvigula americana

Dowitcher
Limnodromus griseus

Gadwall
Anas strepera

Glossy ibis
Plegadis falcinellus

Goldeneye
Glaucionetta clangula

Great blue heron
Ardea herodias

Green heron
Butorides virescens

Green-winged teal
Anas carolinensis

Lesser scaup
Aythya affinis

Little blue heron
Florida caerula

Louisiana heron
Hydranassa tricolor

Mallard
Anas platyrhynchos

Marsh hawk
Circus cyaneus

Mottled duck
Anas fulvigula maculosa

Pintail
Anas acuta

Redhead
Aytha americana

Shoveler
Spatula clypeata

Snow goose
Chen hyperborea atlantica

White-faced ibis
Plegadis chihi

White-fronted goose
Anser albifrons

Woodcock
Philohela minor

Yellow-crowned night heron
Nyctanassa violacea

HERPTILES

American alligator
Alligator mississipiensis

Bullfrog
Rana catesbeiana

Southern leopard frog
Rana pipiens sphencocephala

Water snakes
Natrix spp.

Western cottonmouth
Agkistrodon piscivorous leucostoma

APPENDIX C

DREDGING OPERATIONS

1. GENERAL.

The types of dredges used in this region are cutterhead dredges, dustpan dredges, hopper dredges, and bucket dredges. The operation of these dredges is described below.

2. CUTTERHEAD DREDGE.

a. Dredge operation. The dredge along with pontoon line and other attendant equipment is towed to the dredging location. The path to be dredged is usually marked with buoys or alined with targets set on the shoreline. The dredge is set in position facing downstream and one of its spuds is dropped into the waterway bottom. (These dredges have two spuds, long vertical steel poles with pointed bottoms, which are raised by winches and lowered by their own weight through inclosed recesses on each side of the dredge's stern.) With one spud down on the stern, serving as a pivot point, the dredge is swung in an arc by hauling in on one anchor cable and paying out the opposite anchor cable. When the dredge has swung as far as it can go to one side, depending on how far to each side the anchors are set, the opposite spud is dropped and the first one is pulled up. The dredge is then swung in an arc in the other direction. As it swings in the new direction, the dredge advances downstream because the second spud was dropped in a position downstream from the first spud.

b. Advantages and limitations. The chief advantage of a cutterhead dredge is the low cost of operation per cubic yard of material dredged. Although more machinery and power is required to operate the cutterhead, more material is picked up by the suction pipe which increases the productivity of the cutterhead dredge.

Hull design of cutterhead dredges is the same as for suction dredges, and is not suitable for operation in rough water.

3. DUSTPAN DREDGE.

a. Dredge operation. Dustpan dredges operate across shoaled bar crossings in an upstream direction. Anchors with cables are set above the crossing and the dredge pulls itself upstream with hauling winches located on each side of the dredge's bow. Propulsion engines are used only to move the dredge to each dredging

location. Dustpan dredges usually spoil through a floating pontoon line into the lower deep pool below the bar crossing being dredged.

b. Advantages and limitations. Dustpan dredges are designed to make a progressive and continuous cut through a bar crossing during periods of falling river stages. As the cut channel progresses upstream, the river water flowing through this cut assists in removing the shoaling sand from the channel. This scouring action makes the dustpan dredge the most economical dredge for maintaining channels in deepwater bar crossings.

Dustpan dredges cannot remove dense clay, hard packed sand or rock. They are also limited from working in rough water.

4. HOPPER DREDGE.

a. Dredge operation. Hopper dredges normally operate at speeds of 2 to 5 miles per hour and steer in a straight line up or down the channel. The course and channel width may be marked by range markers or buoys; however, electronic positioning equipment has been used very successfully in recent years, especially in bays and open-water channels, to accurately position the dredge. The dredge will continue making passes over the shoaled area until its hoppers are full. The drags are then pulled up, and the dredge goes to a dumping area away from the channel, where the hopper doors in the bottom of the vessel are opened and the spoil is dumped. This method of operation is called dredge and haul.

Another method of operation, called agitation, is used where a hopper dredge is working in a channel where the current or tide is strong. Under these conditions, the hopper dredge makes continuous passes over the shoaled area with its drags down and pumps running. Material is constantly added to the hoppers, but is in suspension with the water that is also picked up. This mixture of sand and water is allowed to overflow from the hoppers and return to the channel. The tide or current will carry the suspended material out of the channel.

b. Advantages and limitations. Hopper dredges were developed specifically for working in rough water. They also dredge in confined channels and harbors where their good maneuverability permits passage of other traffic. Hopper dredges can make a continuous cut through a bar and thereby make a channel available in a short time.

Hopper dredges require water depths greater than their loaded draft in and on the way to dumping areas. They are also limited to dredging projects with sufficient room to turn around. The high

cost of operating a hopper dredge makes the distance required to haul for dumping an important factor.

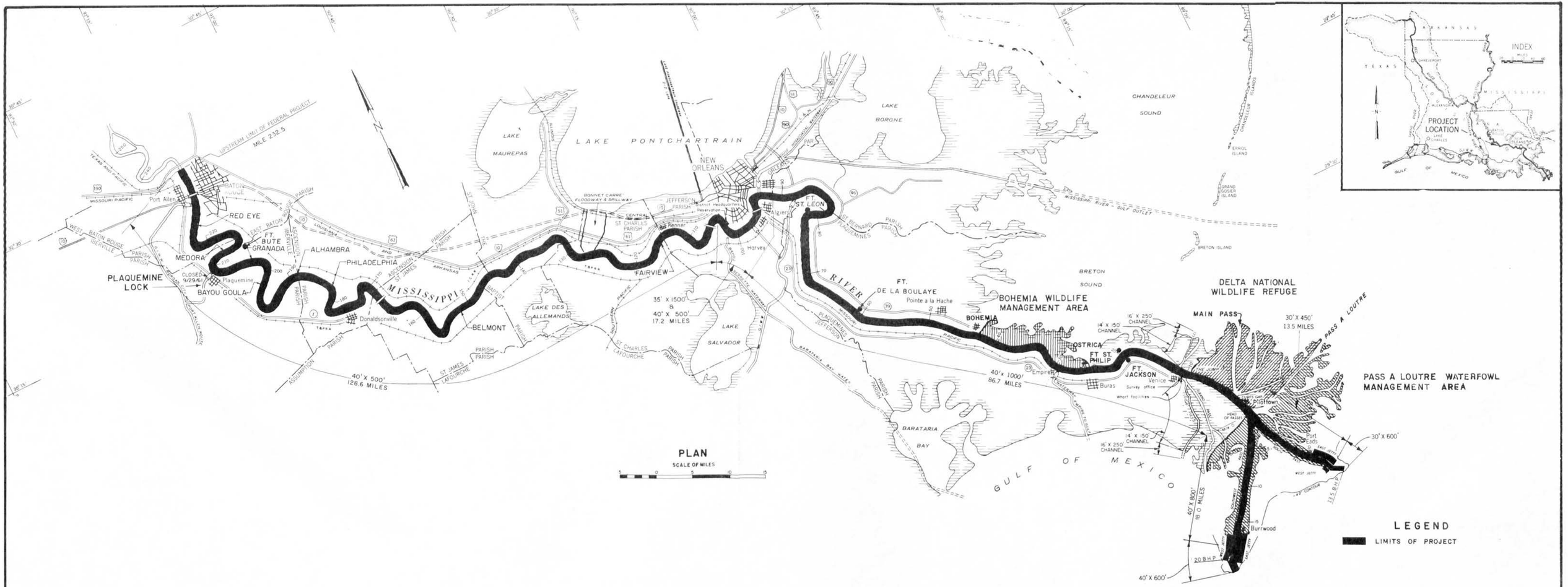
5. BUCKET DREDGE.

a. Dredge operation. Bucket dredges are towed to the location where dredging is to be done, and its spuds are lowered, or it is anchored in position if the current is too strong. Bucket dredges spoil into hopper barges moored along either side when working in slips or harbors, or they spoil directly on the bank if dredging is being done in a narrow river or canal.

Bucket dredges advance themselves into the cut by hauling in bow anchor cables while paying out on the stern anchor cables. If the dredge is using its spuds, it advances by walking with its two bow spuds while pulling in a forward direction with the bucket hoisting cable. The bucket is thrown in a forward direction by swinging the boom and dropping the bucket simultaneously.

b. Advantages and limitations. Bucket dredges are particularly suited for small jobs in confined spaces, such as around piers and small channels, where a hydraulic dredge could not be operated. Bucket dredges can also remove material at great depths, and they are more efficient when digging homogeneous materials like clay, gravel, and shale. Other than dredging, bucket dredges are used extensively for levee construction. Even though the rates of production of bucket dredges are low, they are economical for most jobs because they are operated by a small crew.

Limitations of bucket dredges are their inefficiency in removing light material, and they must spoil directly into a barge alongside or onto adjacent banks.



ENVIRONMENTAL STATEMENT

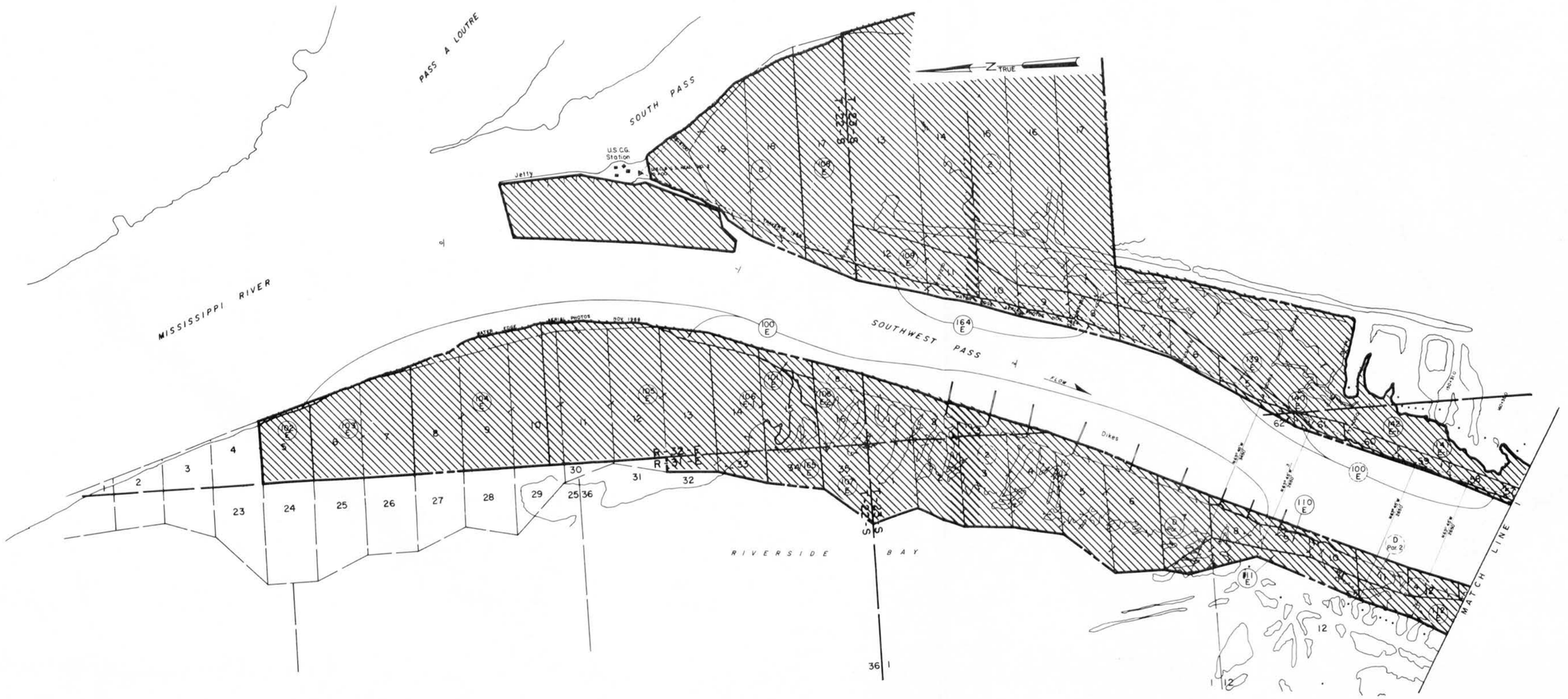
MISSISSIPPI RIVER – BATON ROUGE TO GULF

GENERAL MAP

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

APRIL 1972 FILE NO. H-2-26057

PLATE I



ENVIRONMENTAL STATEMENT

MISSISSIPPI RIVER – BATON ROUGE TO GULF

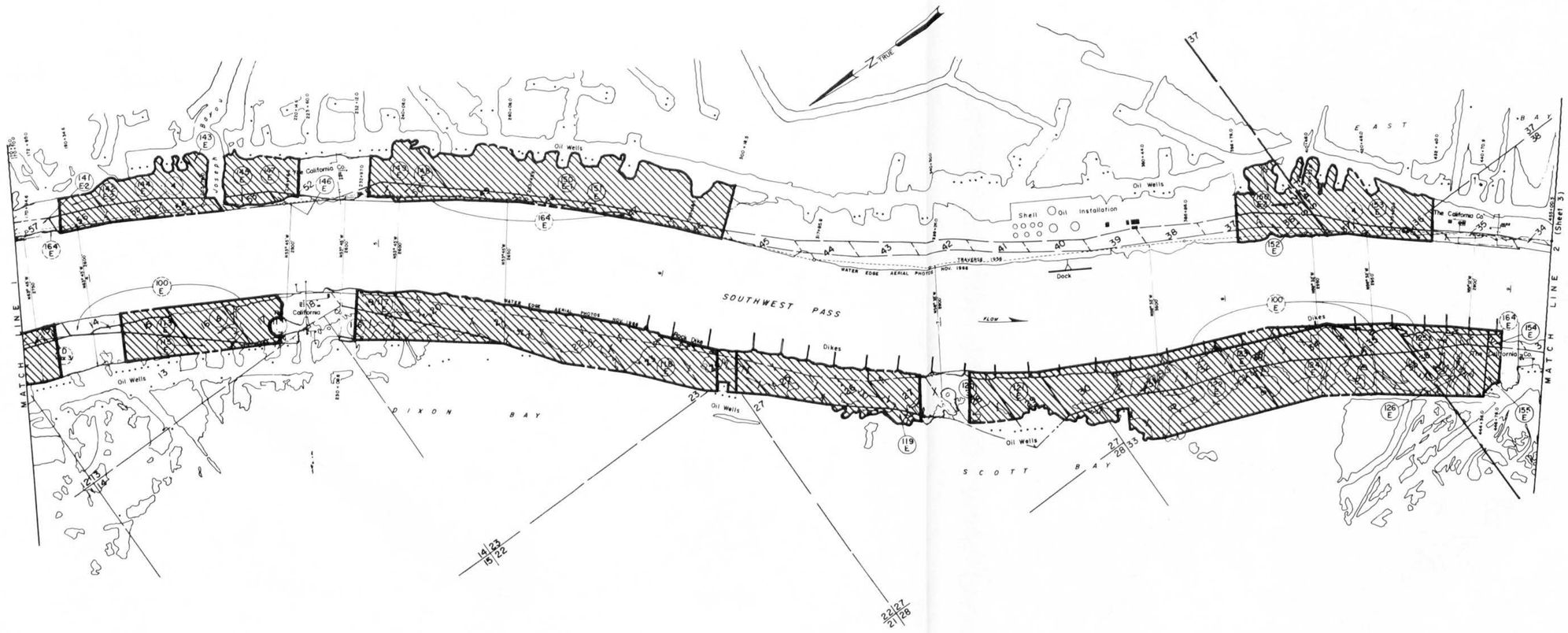
SPOIL DEPOSIT AREA SOUTHWEST PASS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

APRIL 1972

FILE NO. H-2-26057

PLATE 2



SPOIL DEPOSIT AREA

Note: These tract and project boundaries were compiled from aerial photos, General Land Office plats, title information and deed descriptions.

SCALE

0 1 MILE

ENVIRONMENTAL STATEMENT

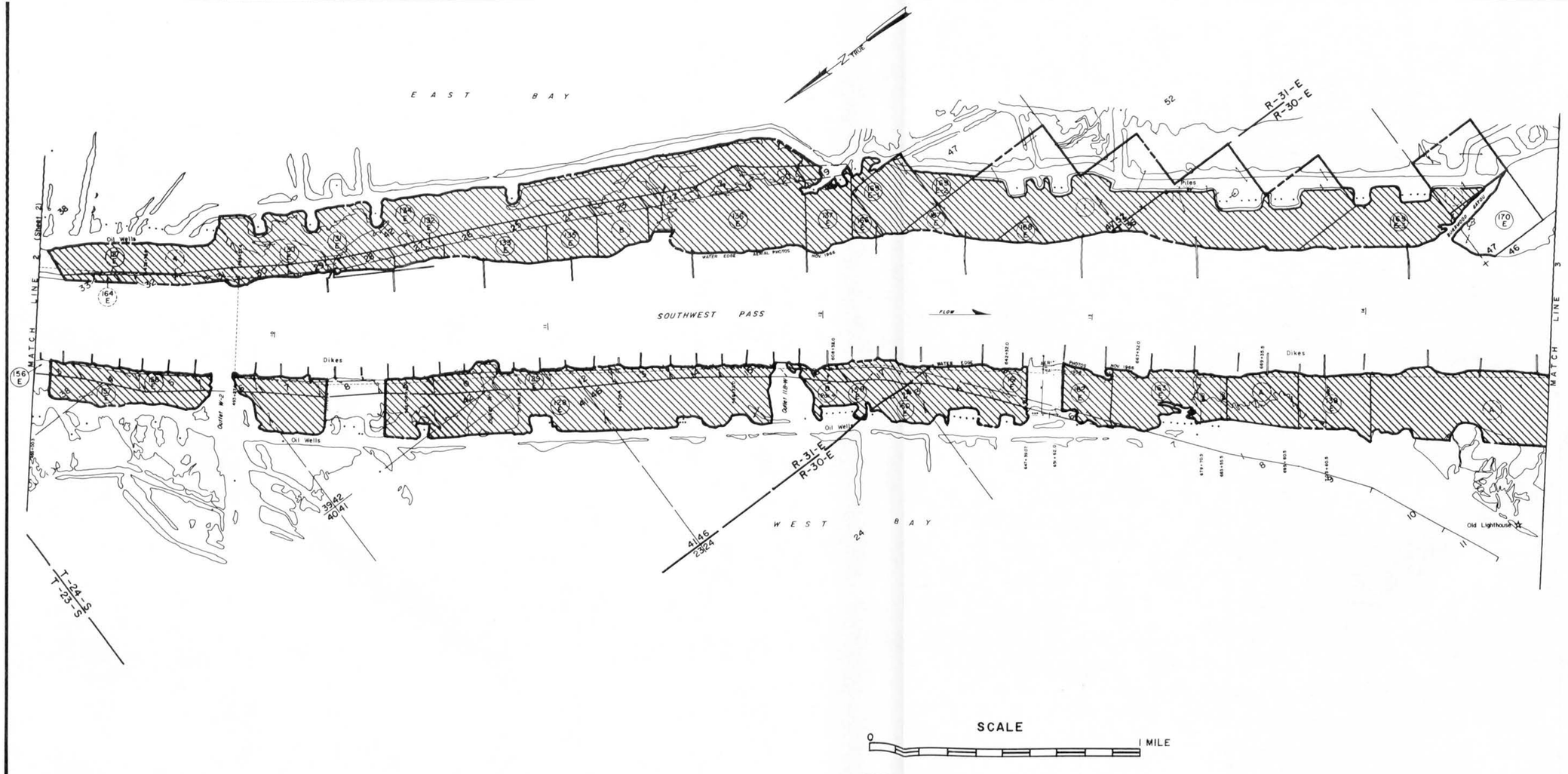
MISSISSIPPI RIVER – BATON ROUGE TO GULF

SPOIL DEPOSIT AREA SOUTHWEST PASS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

APRIL 1972 FILE NO. H-2-26057

PLATE 3



SPOIL DEPOSIT AREA

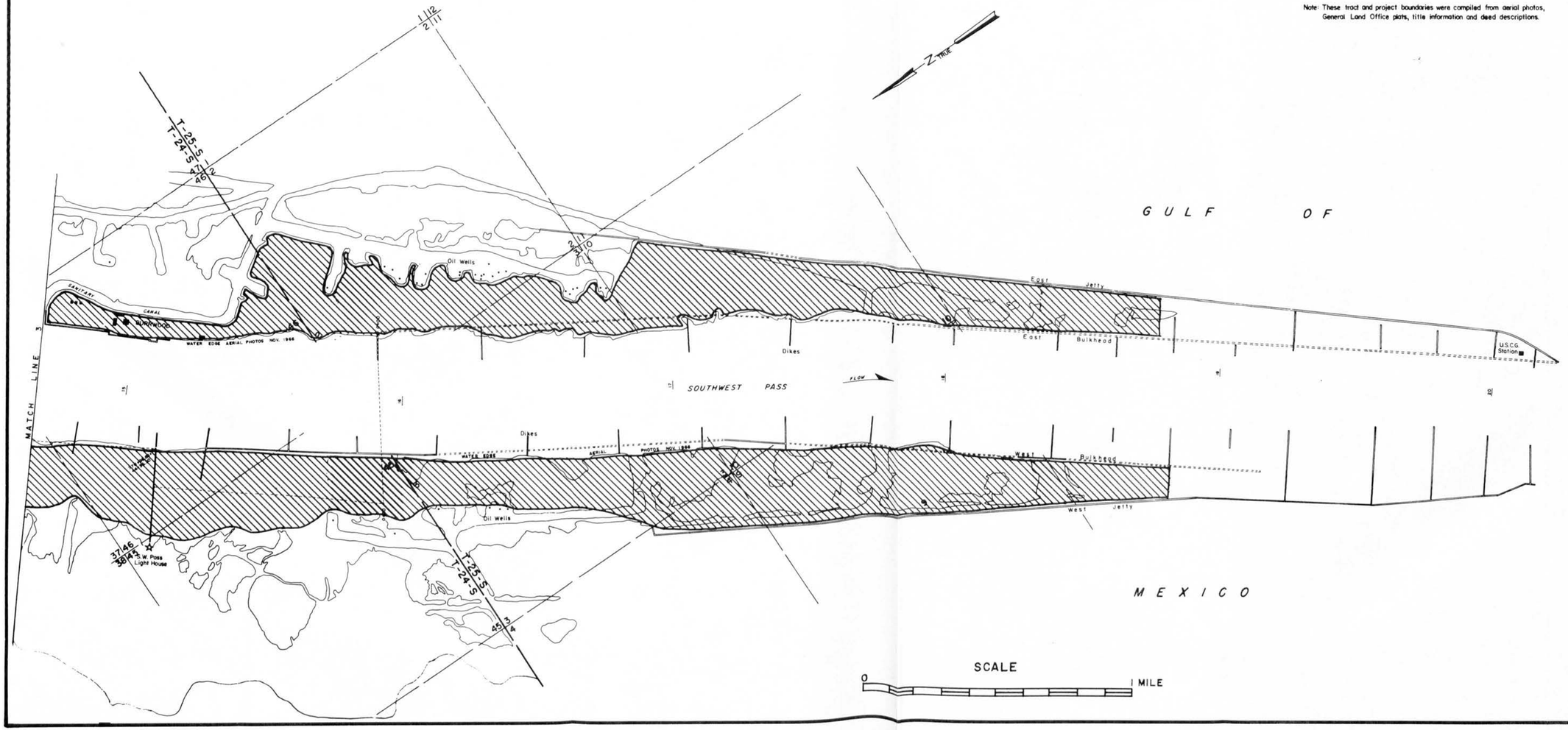
ENVIRONMENTAL STATEMENT
MISSISSIPPI RIVER – BATON ROUGE TO GULF

SPOIL DEPOSIT AREA SOUTHWEST PASS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

APRIL 1972 FILE NO. H-2-26057

PLATE 4



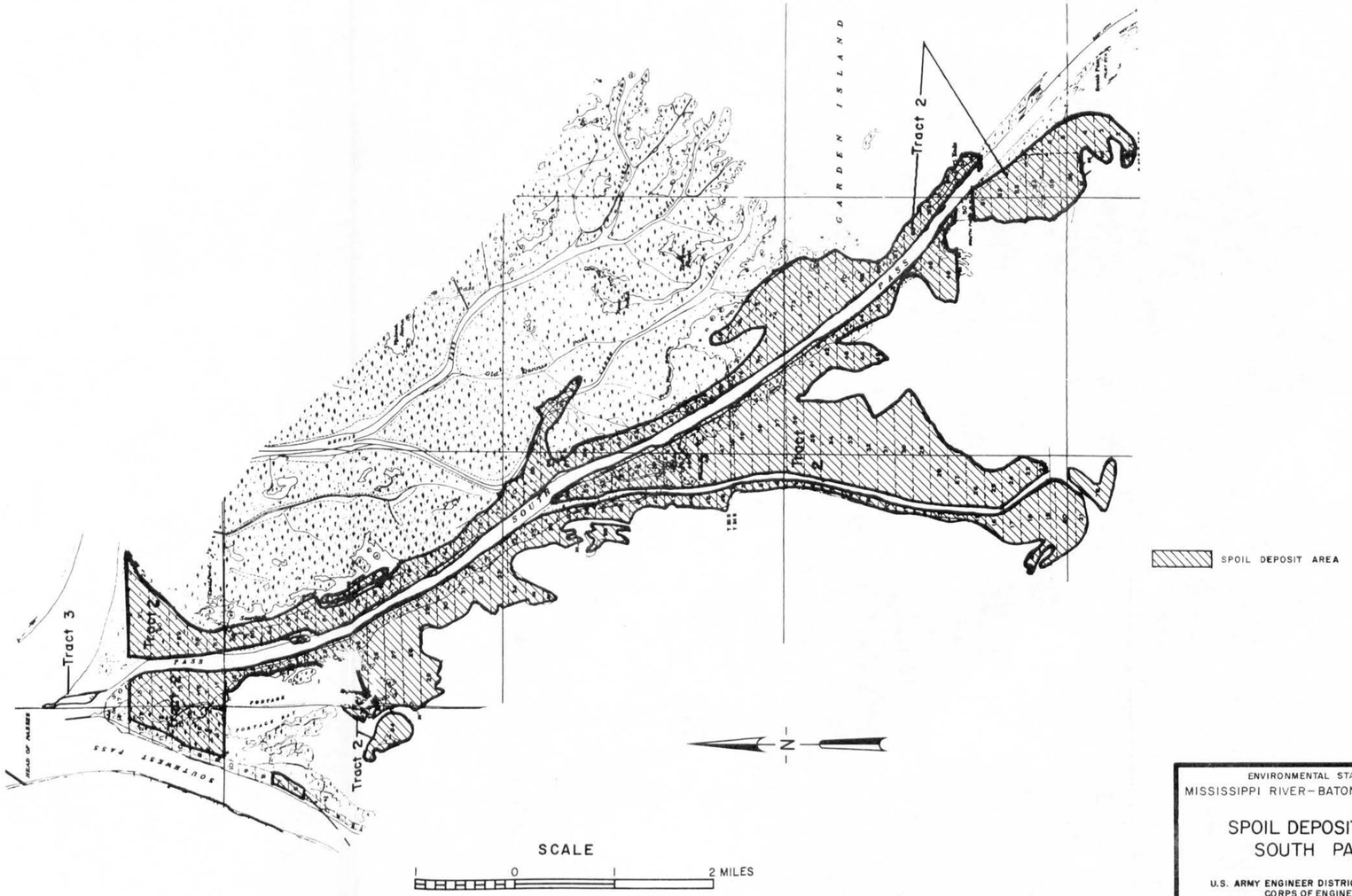
ENVIRONMENTAL STATEMENT
MISSISSIPPI RIVER – BATON ROUGE TO GULF

SPOIL DEPOSIT AREA SOUTHWEST PASS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

APRIL 1972 FILE NO. H-2-26057

PLATE 5



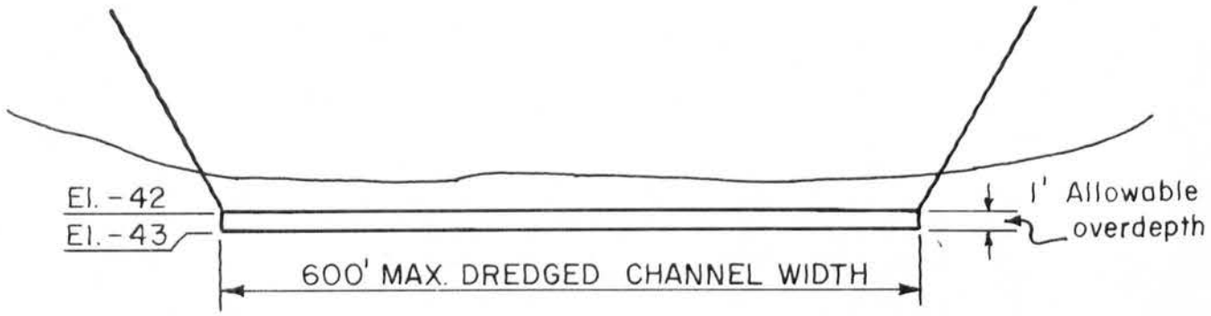
ENVIRONMENTAL STATEMENT
MISSISSIPPI RIVER – BATON ROUGE TO GULF

SPOIL DEPOSIT AREA
SOUTH PASS

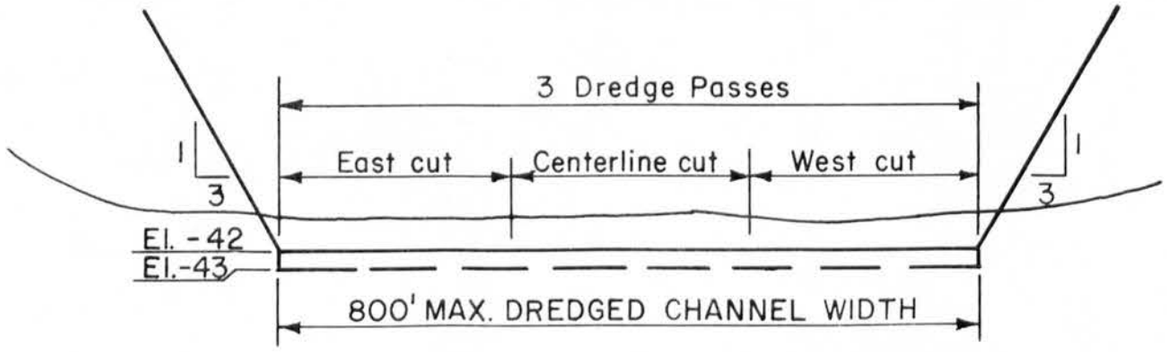
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

APRIL 1972 FILE NO. H-2-26057

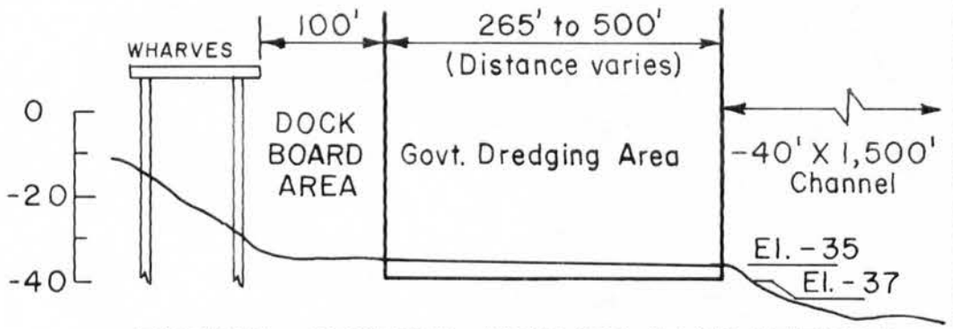
PLATE 6



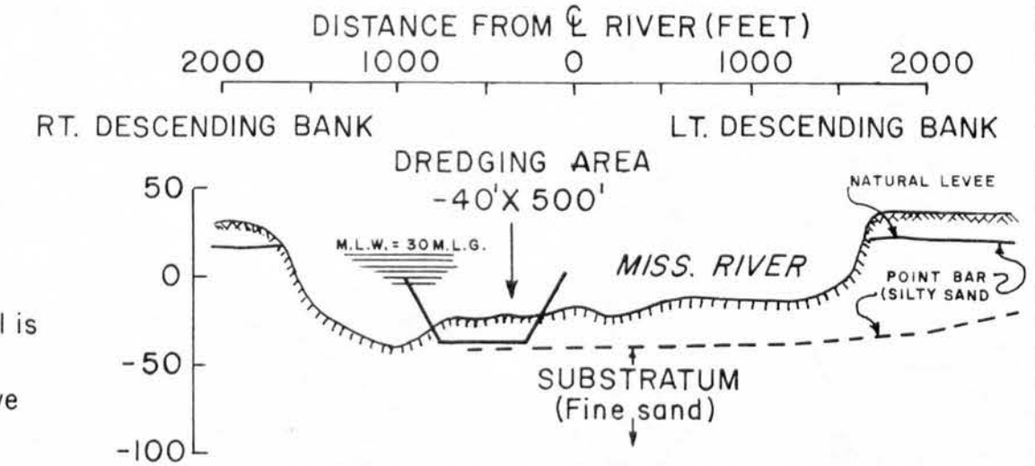
TYPICAL BAR CHANNEL SECTION



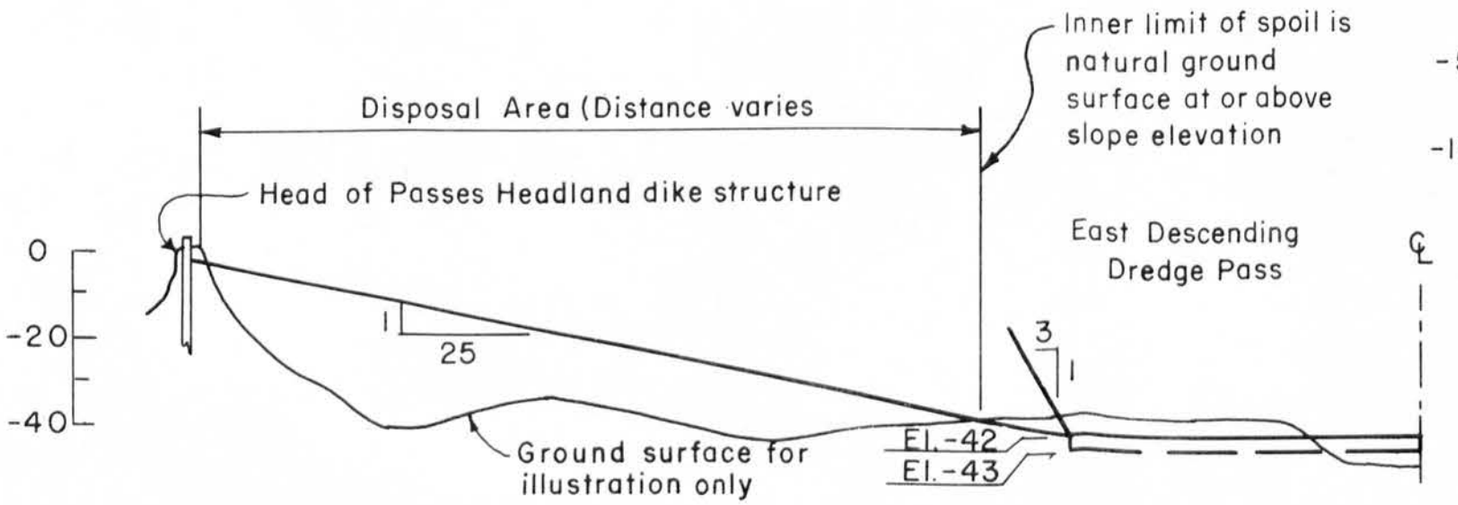
TYPICAL SOUTHWEST PASS SECTION



TYPICAL SECTION, NEW ORLEANS HARBOR



TYPICAL RIVER CROSSING SECTION



TYPICAL SECTION AT HEAD OF PASSES

NOTE: ELEVATIONS ARE IN FEET AND REFER TO MEAN SEA LEVEL

ENVIRONMENTAL STATEMENT
MISSISSIPPI RIVER- BATON ROUGE TO GULF

TYPICAL SECTIONS OF DREDGE CUTS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

APRIL 1972 FILE NO. H-2-26057

PLATE 7

ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1600 PATTERSON, SUITE 1100
DALLAS, TEXAS 75201

March 22, 1973

OFFICE OF THE
REGIONAL ADMINISTRATOR

Colonel Richard L. Hunt
District Engineer
New Orleans District
U.S. Army Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Re: 06-3-85-LA

Dear Colonel Hunt:

We have reviewed the Draft Environmental Impact Statement prepared by your staff for the maintenance project, "Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana." The project provides for maintaining channels of specified dimensions in the Mississippi River and passes from Baton Rouge, Louisiana, to deep water in the Gulf of Mexico. The proposed action consists principally of maintenance dredging at eight crossings (sections of the river where the flow shifts from one side to the other, resulting in shoaling up of the navigation channel), New Orleans Harbor, South and Southwest Passes and bar channels; regulating and contracting works at the Head of Passes and in South and Southwest Passes; regulating and controlling of outlets below New Orleans; and maintenance of jetty systems at the seaward end of South and Southwest Passes.

In general, the statement covers most of the environmental aspects of the proposed action. As in all projects of this type, there is a need to prevent and abate water, air, and noise pollution. All operation and maintenance activities should be carried out with this objective in mind.

In the section, "Description of Project and Action," the statement could be strengthened by including the spoil acreage required for dredging in the South and Southwest Pass reaches.

These comments classify your Draft Environmental Impact Statement as LO-1. The classification and the date of our comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

United States Department of the Interior

OFFICE OF THE SECRETARY
SOUTHWEST REGION
Room 4030, 517 Gold Avenue SW.
Albuquerque, New Mexico 87101

April 6, 1973

ER-73/204

District Engineer
U.S. Army Corps of Engineers
P.O. Box 60267
New Orleans, Louisiana 70160

Dear Sir:

This is in response to your January 31, 1973, letter to the Assistant Secretary, Program Policy, requesting review and comment on the draft environmental statement for the Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana project.

The draft statement is generally well written and comprehensive. The assessment of the project's impact on fish and wildlife resources is adequately discussed.

We anticipate there will be no effect as a result of the proposed action upon any existing or proposed unit of the National Park System, nor upon any site eligible for registration as a National Historic, Natural or Environmental Education Landmark.

This project seems to involve only areas already impacted by the dredging of existing ship channels. However, some consideration should be given to possible impacts on archeological resources by the spoil from maintenance dredging. To state, as on page 54, that no archeological resources are involved is misleading because no qualified professional archeologist has surveyed the spoil deposit area to determine what resources exist. The results of such a survey should be noted in the final statement.

Significant adverse environmental impacts related to the geology and hydrology of the area is not anticipated.

We appreciate the opportunity to comment on this draft statement.

Sincerely yours,

Willard Lewis
Southwest Field Representative

Definitions of the categories are provided on the attachment. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and on the adequacy of the impact statement at the draft stage, whenever possible. If you have any questions concerning our categorization procedures, please let us know.

We appreciate the opportunity to review the Draft Environmental Impact Statement. Please send us one copy of the Final Environmental Impact Statement when it is available.

Sincerely yours,

Arthur W. Busch
Regional Administrator

Enclosure

ENVIRONMENTAL IMPACT OF THE ACTION

LO - Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER - Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to re-assess these aspects.

EU - Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

ADEQUACY OF THE IMPACT STATEMENT

Category 1 - Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2 - Insufficient Information

EPA believes the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3 - Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement. If a draft statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Post Office Box 1630
Alexandria, Louisiana 71301

March 5, 1973

Colonel Richard L. Hunt
District Engineer
Department of the Army
New Orleans District Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

This is in reply to your letter of January 31, 1973, (LMNPL-RE), requesting our comments on the draft environmental statement for the project "Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana".

In our review of the draft statement we find no adverse affects which will result from the project on agriculture other than providing opportunity for further industrial development along the river decreasing agricultural activity on some of the better soils of this area. Industrialization will more than offset this loss by providing jobs and cheap transportation for products that move out of a high agricultural production area to foreign markets.

Other comments are as follows:

1. Page 35, Table 5, 4th column, 6th line - 4.8 percent as shown should be .48 percent.

2. Page 20, 2nd paragraph, last sentence should include small grain and rice in the crops that are grown.

3. Page 56, 2nd paragraph - In the South Pass area the dredged material is placed on either side of the channel. Could the liquid effluent or dredged material be contained as prescribed in the Southwest Pass until the heavier clays and sands settle before it passes into the adjacent bays and estuaries? This would prevent deterioration of the water quality in these areas and the adverse impact on benthic organisms.

The adverse environmental effects as well as the economic elements are well described. The opportunity to review this draft is appreciated.

Sincerely,

J. B. Earle
State Conservationist

cc: Kenneth E. Grant, SCS, Washington, D. C.
T. C. Byerly, Office of the Secretary, USDA, Washington, D. C.

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230

April 4, 1973

Colonel Richard L. Hunt
District Engineer
New Orleans District, Corps of
Engineers
P.O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

The draft environmental impact statement for Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana, which accompanied your letter of January 31, 1973, has been received by the Department of Commerce for review and comment.

The Department of Commerce has reviewed the draft environmental statement and has the following comments to offer for your consideration.

Under Existing Environmental Setting, subsection g, Zoological Elements, some of the salt water marsh species of fish are listed; however, there is no discussion of relative abundance or harvest. Also, there is no mention of the species inhabiting the open water areas around the passes and other parts of the lower delta. A thorough discussion of the fishing harvest from the project area should be presented, using data from sources such as Lindall, Hall, Sykes, and Arnold (1971) and Current Fisheries Statistics Nos. 5721 (1971) and 5794 (1972). The catches from Hydrologic Unit III, as well as Units II and IV, of Lindall, et al, (1971) should be discussed.

In subsection h, Economic Elements, the value of the commercial fishery in the project area should be presented.

With regard to Coordination With Others, the frequency of future coordination of spoil disposal plans with federal and state fishery agencies under the Fish and Wildlife Coordination Act, as amended, should be discussed.

We hope these comments will be of assistance to you in the preparation of the final statement.

Sincerely,

Sidney R. Galler

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

Literature Cited

Current Fisheries Statistics No. 5721, 1971, Gulf Coast Shrimp Data, Annual Summary 1970, U.S. Dept. of Comm., NOAA, NMFS, 35 p.

Current Fisheries Statistics No. 5794, 1972, Louisiana Landings, Annual Summary 1970, U.S. Dept. of Comm., NOAA, NMFS, 7 p.

Lindall, William N., John R. Hall, James E. Sykes, and Edgar L. Arnold, Jr., 1971, Louisiana Coastal Zone: Analyses of Resources and Resources Development Needs in Connection with Estuarine Ecology. Sections 10 and 13, Fishery Resources and their Needs. Report of the Commercial Fishery Work Unit, prepared for Dept. of Army, New Orleans District Corps of Engineers, Contract No. 14-17-002-430 (Mimeographed).

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

ADDRESS REPLY TO:
COMMANDER (mep)
EIGHTH COAST GUARD DISTRICT
CUSTOMHOUSE
NEW ORLEANS, LA. 70130

5900

Colonel Richard L. Hunt
District Engineer
New Orleans District
Department of the Army
U. S. Corps of Engineers
P. O. Box 60267
New Orleans, La.

RE: Draft Environmental Statement - Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana dtd 29 Jan 73

Dear Sir:

The Commander, Eighth Coast Guard District does not have any objections to the referenced draft environmental statement.

Sincerely yours,

J. F. MUNDY, Jr.
Captain, U. S. Coast Guard
Chief, Marine Safety Division
By direction of the Commander
Eighth Coast Guard District

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
REGIONAL OFFICE
1114 COMMERCE STREET
DALLAS, TEXAS 75202

March 2, 1973

OFFICE OF
THE REGIONAL DIRECTOR

Our Reference: EI # -273-206

R. L. Hunt, Colonel, CE
District Engineer
Department of the Army
New Orleans Dist., Corps of Eng.
P. O. Box 60267
New Orleans, Louisiana 70160

Re: Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana
LMNPL-RE

Dear Mr. Hunt:

Pursuant to your request, this office has completed a Departmental review of the Environmental Impact Statement in accordance with the provisions of Section 102(2)(C) of P.L. 91-190 and the Council on Environmental Quality Guidelines of April 23, 1971.

Environmental health program responsibilities and standards of the Department of Health, Education, and Welfare include those vested with the United States Public Health Service and the Facilities Engineering and Construction Agency. The U. S. Public Health Service has those programs of the Federal Food and Drug Administration (milk, food, interstate travel and shellfish sanitation) and of the Health Services and Mental Health Administration, which include the Bureau of Community Environmental Management (housing hygiene, injury control, recreational health, and insect and rodent control) and the National Institute of Occupational Safety and Health.

Attached are comments and reactions to the Environmental Statement made by departmental agencies concerned with environmental health aspects of the project.

We thank you for the opportunity to coordinate our mutual environmental interests as they relate to this project proposal.

Very truly yours,

Jerry D. Stephens

Jerry D. Stephens
Environmental Impact Coordinator

Enclosures

ORD-EI-3

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

Reaction Review and Comments on Environmental Impact Statement for Project Proposal:

Draft Environmental Impact Statement Reviewed With Objections [ ]

Draft Environmental Impact Statement Reviewed With No Objections [X]

Date: 13 February 1973 EI# 0273-206

Agency/Bureau: Bureau of Community Environmental Management

Project Proposal: Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana

Comments: The placement of dredged spoil on approximately 725 acres of marsh and existing spoil banks, should be effected with adequate drainage to prevent ponding of water on berms or behind spoil banks, levees, and/or dikes. Further it is recommended that all such disposition of spoil material be in accordance with State and Local requirements, supplemented by the appropriate health guidelines in the publication: Prevention and Control of Vector Problems Associated with Water Resources (Public Health Service Monograph, January 1965).

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
819 TAYLOR STREET, FORT WORTH, TEXAS 76102

REGION VI

March 19, 1973

IN REPLY REFER TO:
LMNPL-RE

AIR MAIL

Colonel Richard L. Hunt, District Engineer
Corps of Engineers
Department of the Army
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

The Draft Environmental Statement for dredging operations in the Mississippi River from Baton Rouge to the Gulf of Mexico has been reviewed by the Department of Housing and Urban Development's New Orleans Area Office. That Office's comments on the subject statement are as follows:

> "We conclude that the dredging activities will not have any significant adverse effect on the environment around communities situated near the river. Also, it is anticipated by the Corps of Engineers and concurred in by my review that the resultant of the navigation channel down the river cannot help but have a positive effect on the ports of Baton Rouge and New Orleans and the surrounding economic community."

Sincerely,

Wm. W. Yerkes

for David W. Baker
Environmental Clearance Officer

cc: General Counsel, CEQ (10 copies)
Jim Miller, MCE
Andre Bouchardon, 6.3PP

ADVISORY COUNCIL
ON
HISTORIC PRESERVATION

WASHINGTON, D.C. 20240

March 14, 1973

Colonel Richard L. Hunt
District Engineer
Corps of Engineers
Department of the Army
New Orleans District, Corps of Engineers
P.O. Box 60267
New Orleans, La. 70106

Dear Colonel Hunt:

This is in response to your request of January 31, 1973, for comments on the environmental statement for Mississippi River Project, Baton Rouge to the Gulf of Mexico, Louisiana. Pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the Advisory Council on Historic Preservation has determined that your draft environmental statement appears adequate regarding our area of expertise and we have no further comment to make.

Sincerely yours,

Ken Tapman
Compliance Officer

THE COUNCIL *is charged by the Act of October 15, 1966, with advising the President and Congress in the field of Historic Preservation, recommending measures to coordinate governmental with private activities, advising on the dissemination of information, encouraging public interest and participation, recommending the conduct of special studies, advising in the preparation of legislation, and encouraging specialized training and education. The Council also has the responsibility to comment on Federal or Federally-assisted undertakings that have an effect on cultural property listed in the National Register.*

STATE OF LOUISIANA
DEPARTMENT OF PUBLIC WORKS
P. O. BOX 44155, CAPITOL STATION
BATON ROUGE, LA. 70804

ROY AGUILLARD
DIRECTOR

March 26, 1973

Colonel Richard L. Hunt, CE
District Engineer - Department of the Army
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Re: LMNPL-RE - January 31, 1973

Dear Colonel Hunt:

A draft environmental statement for the proposed project "Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana" was recently forwarded to this department for our review and comments as required by the National Environmental Policy Act of 1969, Public Law 91-190.

We have completed a review of your draft environmental statement prepared by your office and find it to adequately cover the environmental aspects related to the construction of this project. We have no comments or suggestions to offer relative to modifications of your statement.

We appreciate the opportunity to review and comment on this statement.

Sincerely yours,

DANIEL V. CRESAP
CHIEF ENGINEER

ART/mn

State of Louisiana

R. T. SUTTON
COMMISSIONER

DEPARTMENT OF CONSERVATION
BATON ROUGE 70804

P. O. BOX 44275

March 16, 1973

Department of the Army
New Orleans District
Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

In re: LMNPL-RE

Attention: Colonel Richard L. Hunt

Dear Sir:

Members of the staff of the Department of Conservation have reviewed the draft environmental statement for the project "Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana."

I concur in the recommendation and can see no ill effect from the proposed dredging operations.

Very truly yours,

R. T. Sutton
Commissioner

FLSjr/lwh

LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803

DEPARTMENT OF GEOGRAPHY AND ANTHROPOLOGY

February 6, 1973

Colonel Richard L. Hunt
New Orleans District Corps of Engineers
P. O. Box 60267
New Orleans, LA 70160

Dear Colonel Hunt:

In respect to recent draft of the "Mississippi River Baton Rouge to the Gulf of Mexico, Louisiana" environmental statement, I note the omission of one, and possibly two most important historic forts which could become involved with the project activities.

The first site is that of Fort Saint Leon, the remains of which are along the right bank of the Mississippi River in the English Turn Bend, Plaquemines Parish. Built in the 18th century.

The second site, also in Plaquemines Parish, consists of the remains of Fort de la Boulaye (?). It is situated along the left bank of the Mississippi just north of Phoenix, Louisiana. It also was built in the 18th century, however, I am uncertain about its precise location in respect to the present levee.

Respectfully,

Robert W. Neuman

Robert W. Neuman
Curator of Anthropology

RWN:djw

STATE OF LOUISIANA

Department of Art, Historical and Cultural Preservation

OLD STATE CAPITOL, BATON ROUGE, LOUISIANA 70801
(504) 389-5086

EDWIN EDWARDS
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DIRECTOR

MRS. PEGGY RICHARDS
ASSISTANT DIRECTOR

March 5, 1973

Col. Richard L. Hunt
District Engineer
U. S. Corps of Engineers
New Orleans District
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

RE: LMNPL-RE

There are five sites on the National Register of Historic Places in the vicinity of the project "Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana." They are

Fort de la Boulaye site, near Phoenix
Fort Jackson, near Triumph
Fort St. Philip, near Triumph
Homeplace Plantation House, Hahnville
Bayou Plaquemine Lock, Plaquemine

There are also two sites in this vicinity actively under consideration for nomination to the National Register. They are:

Hermitage Plantation, 1 mile south of Marchandville and 1-3/4 miles east of Darrow
Destrehan Plantation, Louisiana Highway 48 (River Road) Destrehan

At this time we have no reason to believe this project will effect these historic sites.

Sincerely,

Jay R. Broussard
State Liaison Officer for Historic Preservation
Director, Department of Art, Historical
and Cultural Preservation

JRB/bc

NEW ORLEANS CENTROPORT U.S.A.

Colonel Richard L. Hunt
District Engineer
Department of the Army
New Orleans District
Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Subject: Draft EIS, Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana

Dear Colonel Hunt:

The Board of Commissioners of the Port of New Orleans has reviewed the draft statement, subject as above. We find no significant detrimental effects which will result from the project on the quality of the human environment.

Very truly yours,

H. R. Haar, Jr.
Associate Port Director